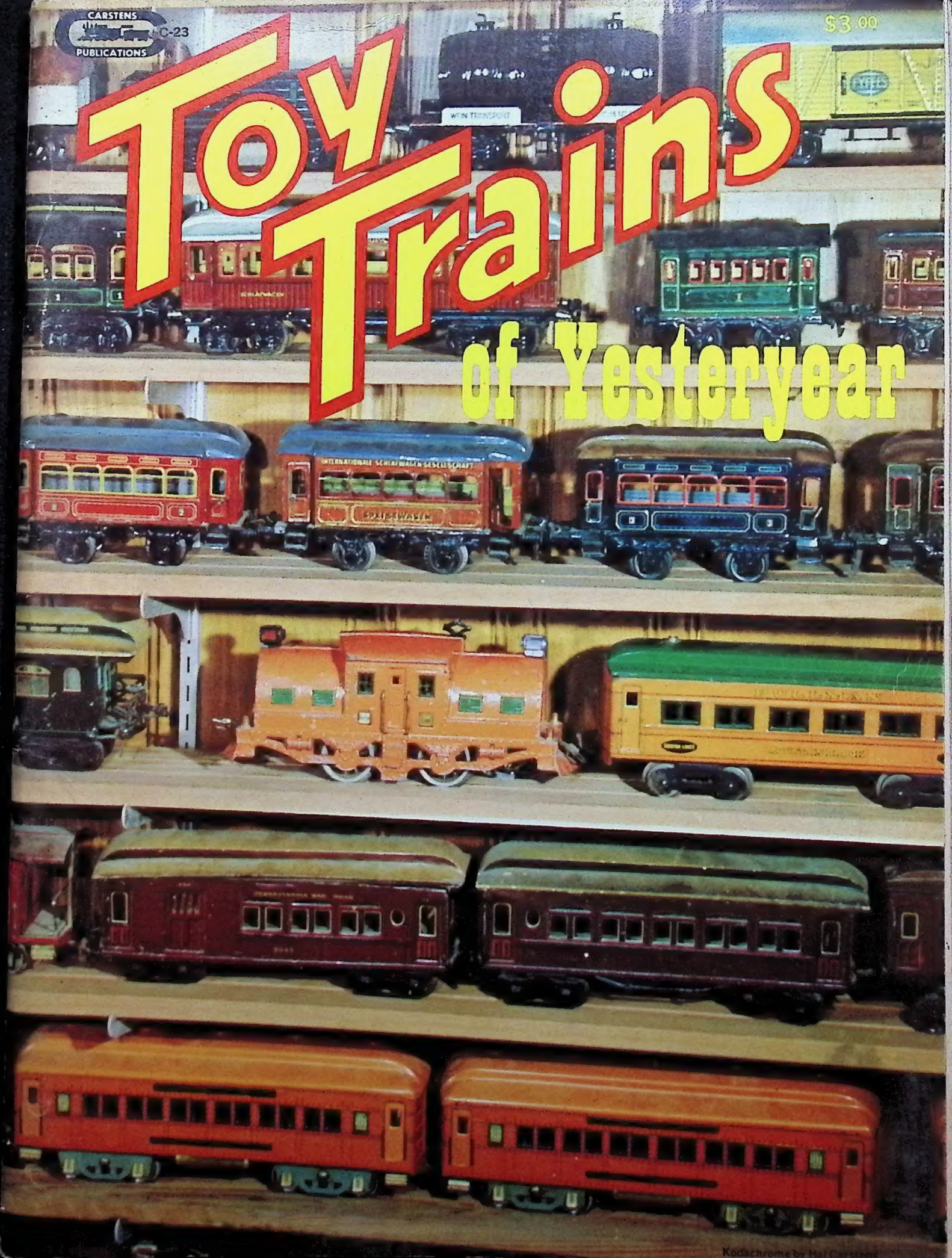
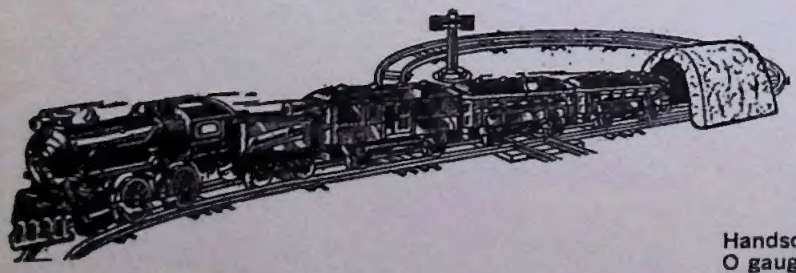


Kodachrome by Hal Carstens

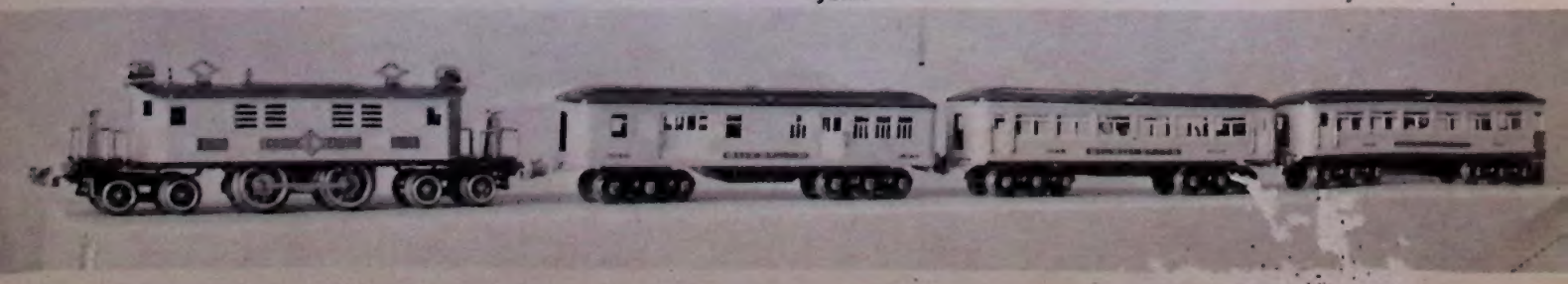
Toy trains of yesteryear in O and Standard Gauge running side by side on a giant Christmas display layout at the Abby Aldridge Rockefeller Folk Art Museum, Williamsburg, Virginia. A growing number of collectors now insist that their old equipment be able to operate, as well as look good. Display and equipment set up by Hal Carstens.

PHOTO CREDITS: Toy Trains Magazine series by Case Kowal. Other photos by Hal Carstens, Louis J. Redman, Train Collectors Association Inc., Lionel Corporation, Walter A. Lucas, and the Model Craftsman Publishing Corp. collection.

Collectors' items depicted in these pages came from the following collections as the time they were photographed: Case Kowal, Hal Carstens, Louis J. Redman, Bill Vagell, the late Walter A. Lucas, Lionel Corporation, Roger Arcara, Herb Morley, and Joe Ranker.



Handsome Ives 1932 vintage 1694 with 1695-1696-1697 cars in O gauge came from the Lionel factory at Irvington, New Jersey. Set is one of the most prized by all collectors; was made only one year.



Toy Trains of Yesteryear

$3.00

by Case Kowal

RAIL-CRAFT
CARSTENS PUBLICATIONS C-22
LIBRARY

Library of Congress Catalog Card No. 73-188178
ISBN No. 91168-22-4

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MODEL CRAFTSMAN PUBLISHING CORP.
31 Arch Street
Ramsey, N.J. 07446

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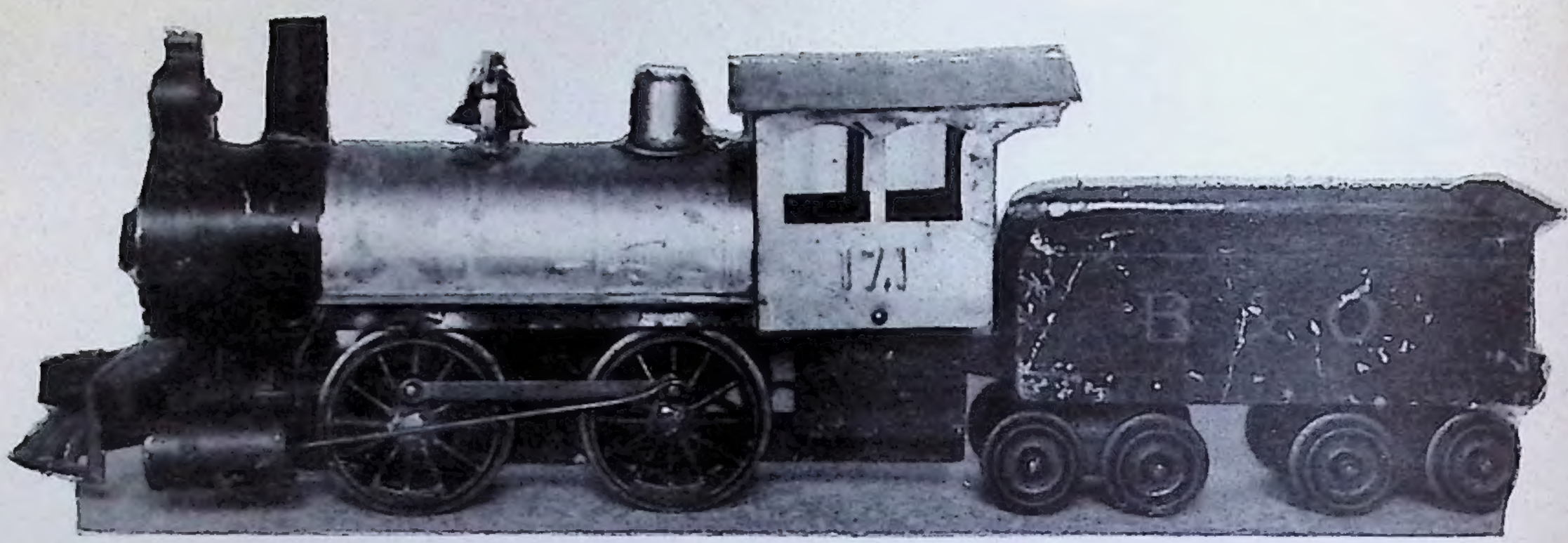
TOY TRAINS OF YESTERYEAR puts into one convenient low-priced volume many of the toy train collecting articles written by Case Kowal for TOY TRAINS MAGAZINE during 1953 and 1954. The issues containing these articles have long since been out of print and the back issues of TOY TRAINS usually command a premium, when indeed, they can be found. At the request of countless collectors, we have therefore produced this second volume for the toy trains collector in the Carstens Rail-Craft Library.

Toy train collecting has come a long way since 1953, the year before the Train Collectors Association, Inc., was organized. Indeed, many items manufactured in 1953 and later have become collectors' prizes in themselves. Restoration properly done has come of age. Train meets are a common happening throughout the country.

While all the material in this book has been completely reset with brand new computerized film type-setting, the publishers have not changed the original articles in any way. They are reprinted just as they originally appeared insofar as the text is concerned, and without apology, but we do want the reader to know that there conceivably could be new discoveries since the original writing which might conflict with some of the data presented here.

For greater reading pleasure, we have made new layouts and added some new illustrations. Collectors looking for additional material should check back and current issues of RAILROAD MODEL CRAFTSMAN MAGAZINE, by the publishers of TOY TRAINS and the RAIL-CRAFT LIBRARY, as well as books by Louis H. Hertz, the Ladd check lists, and publications of the Train Collectors Association.



1 - CARLISLE & FINCH

Carlisle & Finch O-4-O, left, and baggage car, right opposite, were well proportioned for their day; were built of wood, sheet metal, iron and brass. These two inch gauge 2-rail trains ran on batteries.

IN 1910 railroad travel, high speed steam power was quite naturally a much discussed topic and it enjoyed priority conversation everywhere from roundhouse mechanics and way station clerks, to high railroad top brass. In this roaring soot and cinder filled atmosphere, Carlisle & Finch, a reputable Ohio manufacturer of light electrical goods and novelties, was industriously manufacturing, along with its several toy train models, its famed No. 32 steam type electric toy locomotive and passenger car set. This unit was capable of traveling 150 to 200 feet per minute! With this miniature express train speed, Carlisle & Finch hopefully wished to out-distance its tinplate competitors (Lionel, Ives, Voltamp, Knapp, Howard, Electoy and others) in the toy electric train mad race for popularity.

In these exciting days of dry cell battery powered miniature train manufacturing, nobody could foretell the handwriting on the wall. Eventually all non-exclusive toy electric train manufacturers were doomed to discontinue their production of trains. Sadly enough, the firm of Carlisle & Finch, part-time toy manufacturer, was among one of the early group to disband their toy train line during the First World War period.

As it happened, the Christmas season of 1910 was a rather successful one for the Carlisle & Finch toy train line and, as the firm did a very sizeable mail order business, extra work was required in the shipping room during the busy holiday season. Amid the packing boxes and shipping material in the crowded room, one could see the various miniature trains and accessories made by the firm. There was the No. 4 steam type 0-4-0 locomotive and tender, a No. 34 steam type 4-4-2 or Atlantic type and a large deluxe No. 45 Atlantic type with the same wheel arrangement.

Shipping tags with names and addresses from all over the country showed that a large majority of train sets shipped daily weighed 23 pounds—which happened to be the weight of the popular No. 32 electric train outfit.

This set consisted of the No. 4 steam type 0-4-0 locomotive, a matching eight wheel tender, a baggage car and two popular turn-of-the-century open platform coaches along with 18 feet of 2" gauge two rail metal strip track. This material together with six dry cell batteries could be bought for $12.85; a complete wonderful miniature railroad empire. For the beginner, Carlisle & Finch offered "Miniature Electric Railway Construction," a 58 page 5"x7" cloth bound, illustrated book at only 50¢ the copy. In the early days of electric toy trains, such literature was practically a necessity to understand these 20th century toy electric marvels.

The Carlisle & Finch locomotive was constructed of wood, sheet metal, iron and brass and required 8 to 10 volts at 3/4 amperes for its operation. The powerful little electric motor, concealed in the thin hollow boiler, was capable of hauling a string of 10 to 12 cars of the eight wheel type. Power was transmitted to the heavy, cast iron machined 2" drive wheels by double reduction brass spur gearing. The engine was a manual reverse type with the switch placed just inside the cab.

Incidentally, there was also a start and stop lever to complete the operating portion of the train, as it must be remembered that the train was run from dry cell batteries. In the literature, Carlisle & Finch assured every purchaser that the motor was a self-starting one and that it had no dead center.

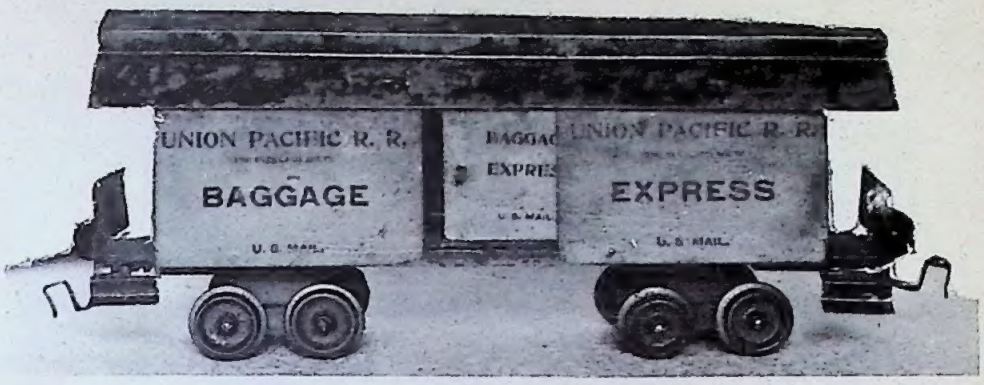
The almost semi-scale locomotive, measuring 19" with tender, was very impressive as it had ample height (5-1/2") with a 4" width. Since the train operated on 2" gauge 2 rail track, it appeared quite realistic even down to its railroad track ties. The locomotive and tender seemed a good deal heavier than their actual 3 pounds total weight.

It is interesting to note that the engine chassis, or underframe, was actually made of wood. This wooden underframe served two distinct purposes: first it greatly helped to eliminate unnecessary weight and second, the natural quality of the wood helped to absorb some of the noise produced by the whirl of the motor and gears. Of course, the wood underframe was always a possible fire hazard in event of a short circuit, but it was actually seldom considered as such in these early wonderful days of toy train pioneering. For weight and traction, the locomotive depended on its iron wheels and the electric motor.

The six dry cell batteries jolted the 5'9" long passenger express train from a dead start to a roaring clip of 150' per minute along the 18' length of toy metal track. Before the days of step down AC toy transformers, there was no way of regulating the speed of the electric train except that the more enterprising model train enthusiasts did use battery rheostats which could be purchased for 50¢ from electrical supply houses.

Open end platform type coaches measured 12" in length, 5" high and 3-1/4" in width. The car body was constructed of stamped and formed brass, fully nickelplated. Nickelplating was a very popular finishing process in those early days and practically every manufacturer had to have at least some of his items finished in this process. The coach had seven arched open windows on each side and open doors on each platform end. The floor and trucks, except

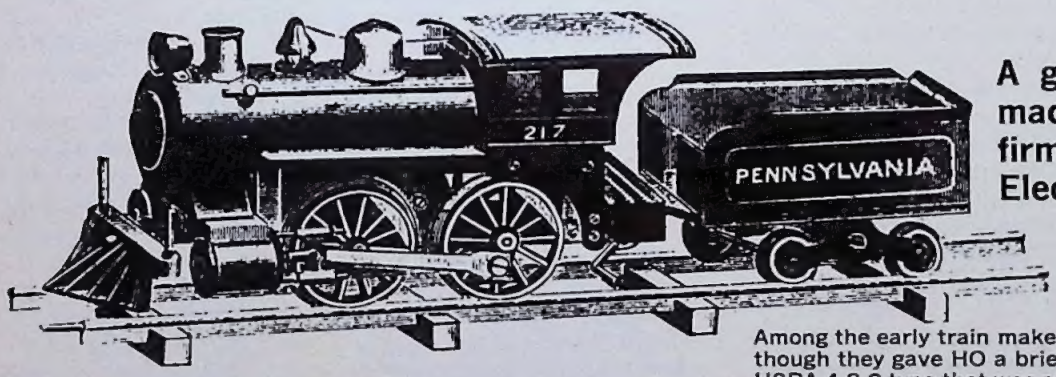
A complete railroad for $12.85! Twenty-three pounds of the finest railroad equipment money could buy. That was the claim of Carlisle & Finch before World War 1.



for the one inch diameter cast iron wheels, were made of wood. The car steps, platform and railing were fashioned from one piece metal, as was also the formed arched roof. In bold lettering, the irresistible words "Electric Railway" appeared neatly on both car sides just underneath the long row of car windows. Undoubtedly the manufacturer intended this wording to represent the entire train powered by the electric locomotive, rather than just the individual car. Some confusion resulted in this respect, since Carlisle & Finch did make several powered or motorized trolley cars which were lettered identically "Electric Railway." This apparent lack of system used in lettering must have indeed caused the firm some embarrassment.

Both the passenger and baggage car tracks were the early plain type, really more of a wheel and axle affair and unfortunately lacked practically all railway prototype detail. Car underbody detail such as truss rods and air tanks were likewise conspicuously absent.

2 - KNAPP TRAINS



A glimpse at the models made by Knapp, the same firm that made the famed Electric Questioner.

Among the early train makers, Knapp enjoyed a very brief life although they gave HO a brief courtship in 1937 with a handsome USRA 4-8-2 type that was ahead of its time. Knapp also used two inch gauge, two-rail.

SINCE its modest founding in 1890, David W. Knapp, proud proprietor of the Knapp Electric & Novelty Company of New York City, had turned the key and opened the doors of his small manufacturing firm six and often seven days a week. It started when David, with $200 of his own capital and a patent safe in his coat pocket, decided to manufacture the Electric Questioner toy or game board which he invented.

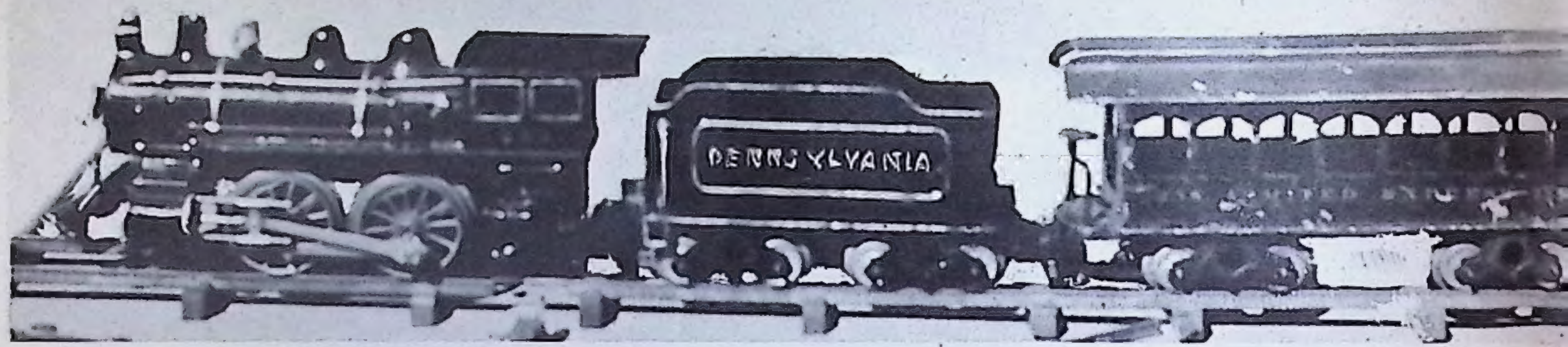
Like so many of the popular electric novelty manufacturing companies of the day, the early Knapp firm limited their activities to small battery electric motors, medical batteries, small dynamos, etc. Without much effort, the Knapp Electric Questioner toy proved to be an immediate success and served as an economic pillar of the company through its active years, accounting for a large percentage of its business. Repeatedly, year after year, the educational toy proved to be a best seller.

The Knapp Electric Questioner was really nothing more than a glorified battery buzzer and contact key—the whole mounted on a suitable rectangular board. Popular selected questions were printed on one-half a sheet of paper along with various answers on the other half. The paper sheets fitted over the board which had metal stubs or contact points. Two flexible cord wire cables completed the operating end of the game. One wire served as a question selector while the negative wire served as the answer selector. In operation, the question selector was used first. In turn, the answer selector wire was brought in contact with the various stubs—when the proper contact was made, a buzzer sounded and the correct answer was given. Many types of interchangeable questions and answer sheets provided hours of fun and amusement.

In due time, like so many of its competitors, David's firm was lured into the manufacturing of toy electric trains and trolley cars both from necessity and the profit motive.

With the success of the Knapp Electric Questioner still buzzing in his ear, it was with a light heart that Mr. Knapp in 1906 decided to produce toy trains—little realizing the size and scope of his new venture. In the beginning with the production of the first locomotive and cars, the fascinating field of miniature toy railway manufacturing loomed very attractive but with time as more car designs, more elaborate engine construction and fancy accessories had to be manufactured to keep up with competitive toy railway manufacturing Joneses, David Knapp began to feel a bit uneasy. What started out as a modest enterprise began to grow so rapidly and become so involved with financial and mechanical complications that it started crowding out the original Knapp factory products.

In a relatively few short years, David Knapp, still in love with his profitable Electric Questioner toy game and his array of small electrical novelty wares, began to realize



Knapp 0-4-0 with open end coach boasting arch windows. Sheet construction used by the early makers makes them look similar until the modeler and collector familiarizes himself with the details and peculiarities of the different lines. Knapp is scarce.

the poor prospects of this highly competitive business and in 1913 decided to drop the entire line of electric railway toys and accessories from production.

The early Knapp locomotives were small four wheel types; an 0-4-0 steam type switcher, and an 0-4-0 electric type listed as the No. 217 and No. 216 respectively. A No. 211 electric traction car completed the Knapp line of 2" two rail motive power.

The steam switcher No. 217 ran on 4 to 6 volts and 1 to 1-1/2 amperes depending upon the number of passenger or freight cars it hauled. The engine itself measured 11" in length and was 5-1/2" in height with drive wheels of 2-1/8" in diameter. A thoughtful and novel feature was a starting switch mounted at the bottom of the engine cab sides that reversed the direction of the motor.

The early model tender measured 6" in length and 3-3/4" in height with wheels of 1" diameter. In appearance, this tender was very striking; a stubby four wheel type with a single truck that, on a second glance, looked as though it were borrowed from one of the eight wheeled, well-designed passenger cars bearing the Knapp favorite lettering, "Limited Express."

In general, this No. 217 steam type switcher had a marked resemblance to the early Lionel switcher even down to the construction materials.

The No. 216 electric outline locomotive made by Knapp seemed to lack all the superstructural detail that was so abundant in the steam type engine, but on the other hand, it had a fine detailed heavy cast iron underframe with working coil springs. This electric outline locomotive was slightly shorter in length than the steam type engine and measured 10-1/2", although it had the same height. The body of the engine appeared indeed very plain without any headlight, pantagraph, handrails, cab steps or bell.

As a manufacturing expedient, Knapp used the same heavy cast iron underframe with working coil springs and motor unit for both the electric engine and the electric trolley or traction car as it was called in the early catalogs.

With the advent of time and experience, a comparative change in the construction of Knapp toy trains appeared very evident as more metal replaced wood throughout each unit. The later improved model steam switcher sported a more graceful tender with eight wheel trucks. The redesigned tender proved a real compliment to the Knapp line with its hand rails, steps and paneled lettering.

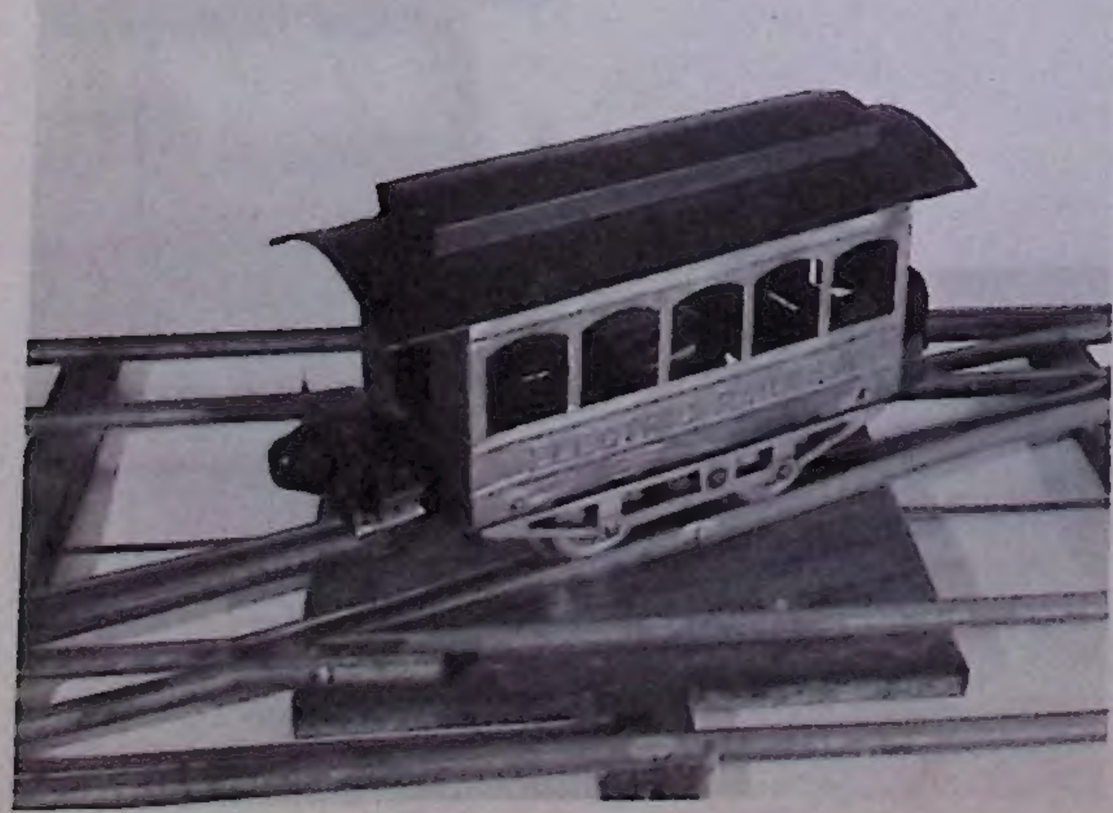
Since during the early years of the 20th Century, the majority of U.S. railroads still used the open end platform coaches, Knapp contently patterned his passenger coaches along the same designs and copied everything from the arched roofs and high windows to the platform brake wheels with a good sense of proportion. The hand painted passenger cars, lettered "Limited Express," were the longest units made by Knapp, measuring 13"x5". As their construction was of light gauge sheet metal, the cars proved to work very satisfactorily with the Knapp low voltage locomotives. The car wheels were made of stamped and formed heavy gauge steel metal with steel wire axles—each set having insulated bushings. The car trucks were made of similar heavy gauge embossed sheet steel.

To enable operators of Knapp toy trains and trolleys to reverse their motive power, automatic trips were sold that were attached directly to the ends of tracks. These proved to be a great novelty and were listed in practically every catalog which, incidentally, also listed standard parts for the engines and cars, such as wheels and axles, brushes, etc.

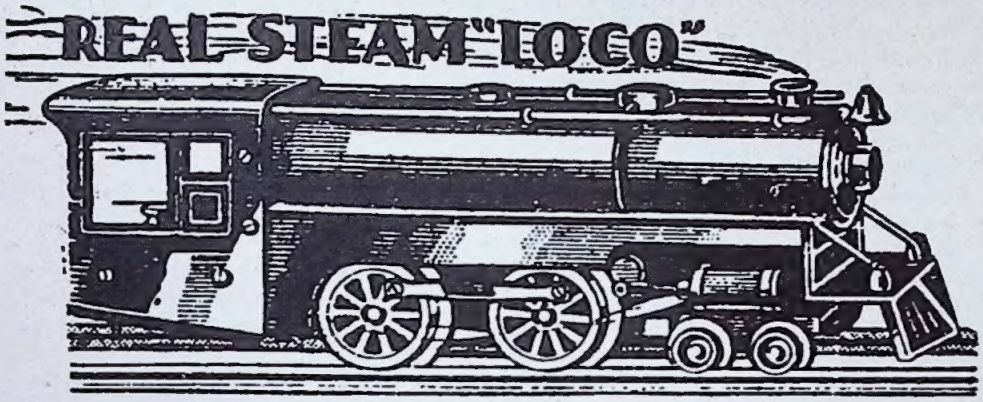
Knapp was one of the early pioneers of sectional toy tracks, as he believed that steel ribbon rail track was unsatisfactory as there was always the danger of the gauge becoming distorted through warpage as a result of constant bending of the rails.

All of the track items made by the firm were constructed of a rolled top section of steel fitted with connecting or joining pins, while the bottom part of the track was nothing more than plain flat ribbon fastened into wooden slotted ties which were usually stained green or brown. Each section of straight 2" gauge 2 rail track measured 12-1/2" in length and was sold eight sections to the box for a dollar. In the curved track, eight sections were required to make up a 3 foot circle and were sold for the same price. To complete its track accessories, the firm made matched pairs of manual control switches and a 45° crossover track section.

Carlisle & Finch No. 2 Gauge trolley in Carstens collection has wood floor, is 2-rail. Track is Marklin 2-rail clockwork (uninsulated) crossover. Early toymakers were highly innovative.



3 - WEEDEN LIVE STEAMERS



The Weeden live steamers were ruggedly built and some are still operable today.

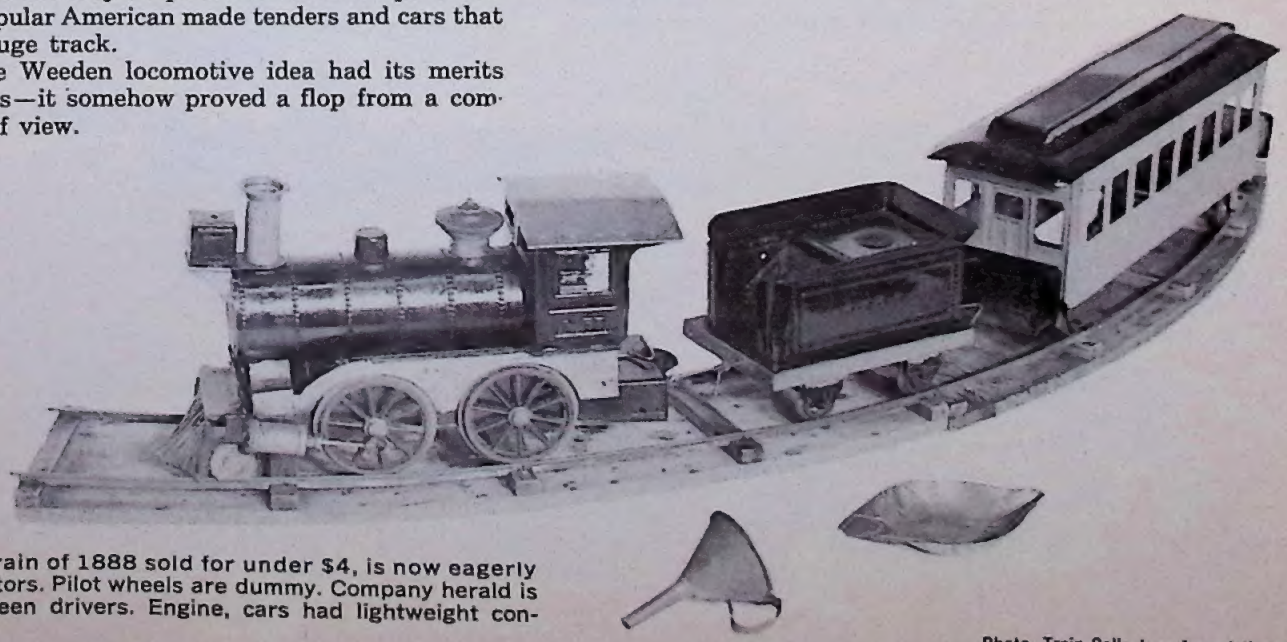
IN tinplate history, some short but forgotten 23 years ago, a popular New England manufacturer of toy steam engines brought out a real live steam locomotive that was perhaps the first and only O gauge mass produced toy of its kind in America. Unfortunately this self-propelled locomotive failed to find a market and was shortly dropped from production. Today the few locomotives that do turn up among collectors are more than just a mere curiosity. These fine constructed locomotives were models that operated with miniature efficiency and are excellent examples of some of the mass production manufacturing methods of more than 20 years ago.

The Weeden Manufacturing Company, established in the late 1880's period, first produced the O gauge 4-4-0 type live steam locomotive at the close of the 1920's period. This toy locomotive, built along the lines of the then current O gauge tinplate models, was designed to operate on tinplate track of either mechanical or electric type such as made by Lionel, Ives, Dorfan, or American Flyer. Since the Weeden firm was already well entrenched in the toy market with its extensive line of stationary steam engines, it apparently had no desire to compete with established toy train manufacturers and made no effort to introduce any line of cars, track or accessories to accompany the steam locomotive. To many who were not acquainted with the Weeden policy, this appeared as a rather strange situation, especially when the company failed to supply a tender with the steam locomotive. At the Weeden factory, this was nothing startling as everyone knew that the steam locomotive could be easily coupled and used with practically any of the popular American made tenders and cars that ran upon O gauge track.

Although the Weeden locomotive idea had its merits and possibilities—it somehow proved a flop from a commercial point of view.

The Weeden realistic steam locomotive measuring a foot in length and selling for just under ten dollars was introduced to the public through the large mail order houses. The fall and winter issues of the mail order catalogs carried the item properly illustrated and priced along with various toy trains and steam toys. Perhaps the high price tag along with the spreading depression were responsible for the sales failure of this unusual tinplate engine. Whatever the reason, the Weeden live steam locomotive was dropped from the nationwide mail order catalogs very shortly—never to appear again.

While the Weeden company was sadly experiencing the sales failure of the alcohol fired steam locomotive—another small but optimistic industrial firm located in Bloomfield, N.J., called the Steam-Electric Company, began negotiating to purchase the manufacturing rights to the locomotive and shortly acquired the live steam venture for a reasonable sum. Laboring under a falling market and burdened with fixed operating expenses, the unlucky 4-4-0 live steam locomotive made little progress and came to a dead stop almost before it got started. It proved to be a failure for the second and last time. The firm hopefully tried to restyle the locomotive which had been fired by an alcohol lamp burner to a model with an electric heating unit that was to heat the boiler, converting the water into steam for power. The electric heating unit was to receive current from the center third rail of the common O gauge electric toy train track.



Weeden Dart train of 1888 sold for under $4, is now eagerly sought by collectors. Pilot wheels are dummy. Company herald is embossed between drivers. Engine, cars had lightweight construction.

Photo, Train Collectors Association, Inc.

Some progress in this direction had been made before the firm ceased manufacturing the steam locomotive and actually several such "electric steam" locomotives were turned out by the firm. While this same electric steam principle had been applied to toy stationary steam engines for several years, this was actually the first time that the idea was being used on a toy live steam locomotive.

The Weeden Manufacturing Company located in the heart of the brass processing industry, used the finest rolled sheet brass available in the construction of its locomotive. The superstructural fittings were formed of polished brass of a weight that was able to withstand fairly rough handling. The miniature live steam pipes were made 1/8" diameter seamless copper tubing of more than ample strength to carry the low pressure generated in the brass boiler. A high fusing solder was used in all of the soldered connections throughout the boiler and steam chest fittings. None of the Weeden locos had any oil reservoirs for automatic lubrication and the engines were best lubricated by the simple method of squirting a few drops of machine oil into the boiler. The light machine oil carried by the steam helped to lubricate the pistons in the steam chests.

Die castings were used rather sparingly in these locomotives. Actually the use of this somewhat soft material was limited to the steam cylinders, pilot wheels and the short eccentric drive arm connecting the piston rod with the gear arrangement. The die cast steam cylinders had clean, sharp rivet detail, which incidentally was the only evidence of rivet detail throughout the entire locomotive. The large screws used in the engine cab assembly could hardly be mistaken for rivet detail, much as it would have improved the overall appearance of the Weeden locomotive. The long smooth lines of the locomotive boiler were broken only by the steam pipe leading down from the steam dome to the steam chests. Two long polished brass handrails were found at the top of the boiler, one on each side extending from the front boiler straight back to the engine cab. These brass rods or handrails were held to the boiler sides by small fittings directly attached to the boiler. A neat cat walk was found on the lower section of the longitudinal boiler. This narrow walk was attached directly to the locomotive side fender skirt which served as a shield for the alcohol burner located underneath the boiler. The sheet brass engine boiler measured 8" in length with a uniform diameter of 1-7/8". The front boiler plate was embossed and had a brass dummy headlight soldered directly in its center. The engine bell, made of polished brass, was a non-operating type. This dummy bell was removable since it was attached to the supporting arm by a machine screw.

In general, the inside cab measurements of the live steam Weeden were large as compared with other O gauge locomotives. The reason for this was quite simple. The removable alcohol burner, located directly underneath the engine cab floor, was secured to the floor by a wing type nut. This special nut had to be removed with finger pressure in order to release the alcohol burner for refueling purposes. The handy open window arrangement helped facilitate the manual removal of the wing nut through the engine cab windows. Inside cab measurements were 2-1/2"x2-1/4"x2-1/4". The cab was made of one piece stamped and formed brass and was attached to the body by eight machine screws, four on each side.

The alcohol burner consisted of a rectangular shaped reservoir tank with a long metal tube with six upright projecting arms. These arms held cotton wick material that was soaked in the alcohol coming from the reservoir. This entire assembly was made of light weight sheet metal and copper tubing. The height of the wicks and the actual flame could be adjusted by removing the burner assembly.

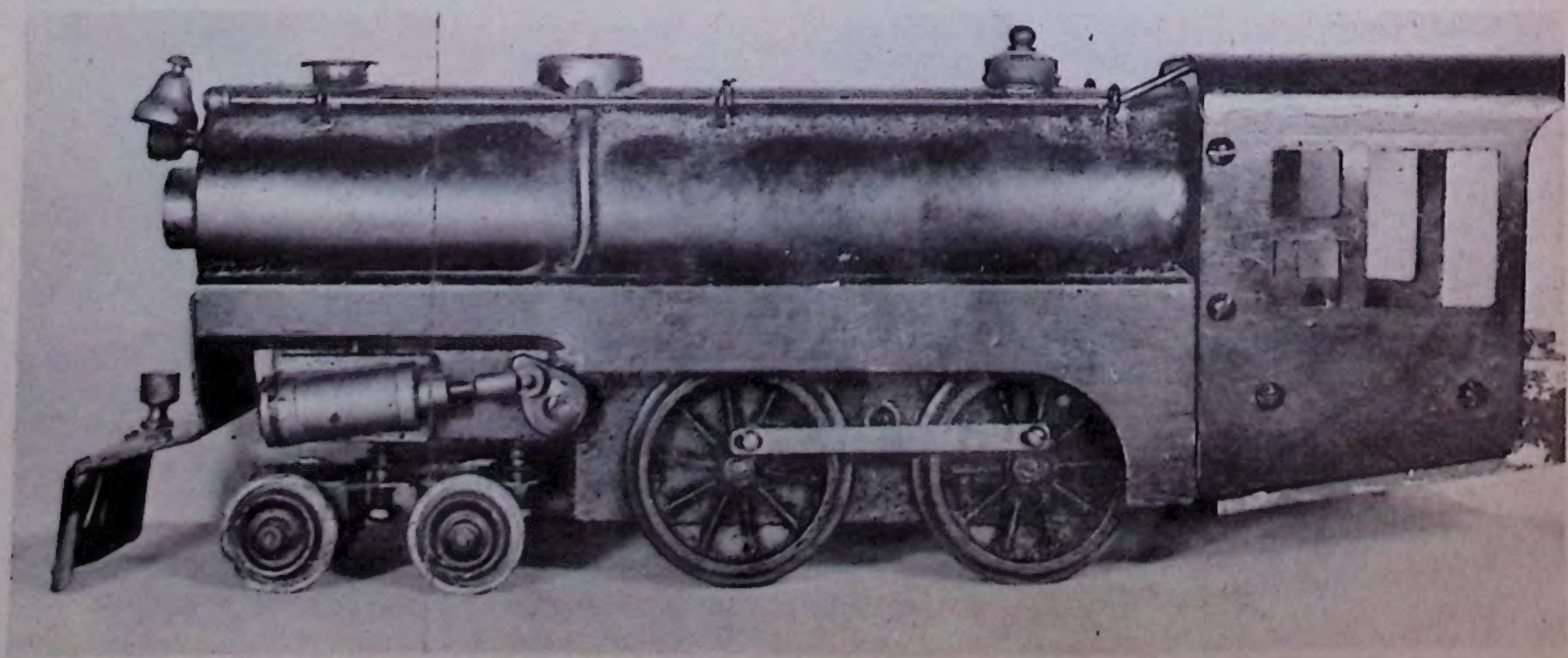
Except for the boiler, steam fittings and alcohol burner, the Weeden locomotive left the factory as a machine screw assembly job. More than half of the locomotive sections or parts could be assembled or taken apart for cleaning or mechanical adjustment.

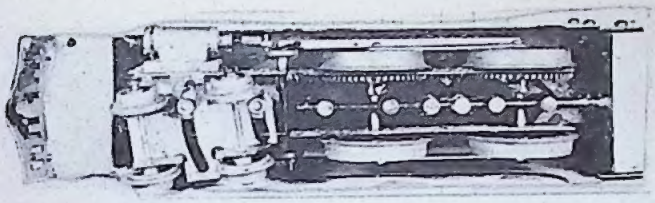
The cast iron drive wheels were 1-3/4" in diameter, fully machined, and had ten spokes each. The wheels were fitted to steel axles cut uniform for O gauge track. For added realism brass side drive rods connected the main drive wheels. In its day the Weeden locomotive was the only O gauge tinplate engine that was made with cast iron drivers.

The pilot truck was made of a single piece of stamped steel and was attached to the engine chassis by two long bolts fitted with coil springs that gave a spring action to the front truck. The rest of the truck consisted of four die cast metal wheels 7/8" in diameter, attached to steel axles with nuts.

The cow catcher or pilot, a stamped steel affair, was fastened to the engine with machine screws. Weeden chose to identify their locomotives with a decal placed right on the pilot. This decal was colored in red, gold and black and had the following wording, "WEEDEN Trade Mark Reg.

Handsome and massive, the early Weeden 4-4-0 live steamers were rugged beasts having a minimum of down time for repairs. The thought of operating them on an indoor rug with resultant spills, using denatured alcohol as fuel is almost frightening.





Underframe view of Weeden 4-4-0 shows the gearing and frame detail.

U.S. Pat. Off." No other wording nor number was to be found anywhere on the locomotive.

The die cast steam chests or cylinders were the typical kind found on practically all of the Weeden steam engines. In size they measured 1-1/2" long and 1/2" in diameter and had a 1/2" stroke. Since these steam chests were the oscillating type they were hardly true prototype. Finished in gold and red colors these oscillating cylinders were the eye catching attraction of the Weeden live steamer. The exhaust steam was piped through and into the smoke stack, quite realistically. Every Weeden boiler had a safety valve which was the pop off type activated by coiled spring tension. The method of controling the speed of these Weeden engines was rather unique since none of the locomotives had any throttle. The speed of the engine was increased or decreased simply by lighting or extinguishing the alcohol burner wicks, as there were six wicks available directly under the boiler. This method of decreasing or increasing steam pressure was the more popular one as compared with the method of adding or subtracting cars to the train, to increase or decrease the load on the engine.

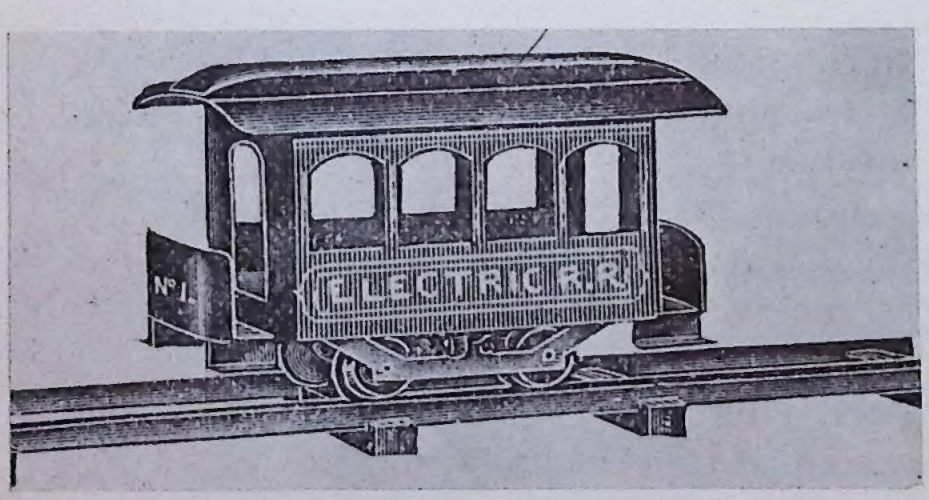
While practically all Weeden stationary toy steam engines were furnished with the ever popular steam whistle, the Weeden locomotives were sadly neglected in this respect and were left to roll on tinplate track without as much as a peep or tweet!

The Weeden engine lacked many of the fine features of the earlier foreign live steam locomotives, such as throttle, whistle, steam pressure gauge, water level gauge, reverse lever, etc.

Every locomotive left the Weeden factory finished in the same manner; boiler, engine cab, fender skirts, and pilot all in black enamel, with red trim on the cat walk and pilot. The main drive wheels were bright red except for the tires and flanges which were left unpainted. The small pilot wheels were painted almost identical. The smoke stack, bell, headlight, dome, safety valve and handrails were all polished brass well suited to the black boiler and body finish.

With every live steam locomotive sold, Weeden provided an instruction sheet giving complete details on the care and operation of the engine. Denatured alcohol was the recommended fuel and water relatively free of insoluable salts (soft water) was likewise recommended. The use of light machine oil on all moving parts was clearly directed. Care had to be used to avoid boiling out all the water in the boiler since the engine was not equipped with any water level gauge. The burner wicks were expendable.

4 - HOWARD TROLLEYS

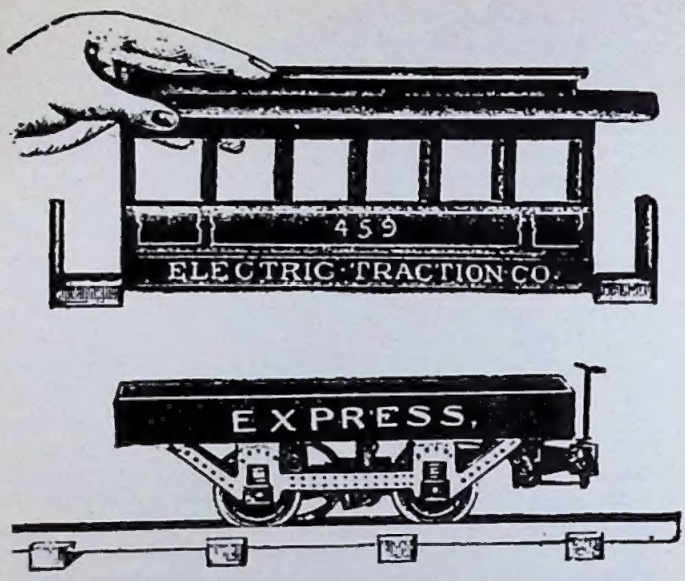


Howard Miniature Lamp Company made a highly desirable series of trolleys back in 1905-1906.

Howard No. 1 trolley was made of wood and sheet metal typical of the 1905 period. Car operated from dry cells on ribbon rails set in wood.

ALONG about the turn of the twentieth century, the electric model hobby enthusiast lived in a small magic world surrounded by bits of copper wire, brass screws, hot solder and simple electric circuits. He eagerly listened to the crackling and looked for the flashing blue terrifying yet amusing electric sparks. Working with these fanciful electric trifles nearly always produced an unmistakable aroma. Unless his work bench was well ventilated the sharp electrical ozone gas and the burning of molten solder would soon linger in his nostrils, but these obnoxious odors were happily a prelude to a more exciting and wonderful electric age made possible by such pioneering firms as the Howard Miniature Electric Lamp Company of New York, whose electric novelty goods began to turn up in slow dribbles in secluded attics, sheltered cellars and occasionally on kitchen tables.

Back in 1905 and 1906 when the Howard Company published the usual annual catalog of brightly polished electrical novelty wares and toy electric trains, it proudly included at least two different types of toy trolley cars of 2" gauge. These pocket sized booklet catalogs were distributed to Howard dealers and came neatly imprinted with the dealer's name and address which usually appeared on the front cover in bold display type. It was through the use of these catalogs that many an early toy railroad hobbyist first became acquainted with factory made toy trains and trolley cars. From its initial production of the electric line of toys, the Howard firm grandly played up the theme of the important simplified construction feature of its wonder of the age toys. The Howard toys could be taken apart and put together to represent a working model in real miniature—toys that were capable of developing the mechanical talents in men and boys. Although the Howard electrical toys were neither kits nor construction sets, they were very vulnerable to the screwdriver and pliers. The firm seldom advertised directly to the public so perhaps



it was no great wonder that its products never acquired the popularity enjoyed by more enterprising competitors.

Howard was one of the early toy electric train manufacturers who recommended the use of the dry cell battery in contrast to the older wet cell battery with less attractive and somewhat messy features. In those days the chief source of electric power used to operate the electric railway toys was either the wet or dry cell batteries, since household electric current as supplied by commercial power and light plants was still in the development stage and relatively few families were able to afford this luxury. All Howard railway toys came furnished with dry cells.

One of the first trolley cars made by Howard was the No. 1, a combination trolley and flat car which was constructed of wood, sheet metal, iron and brass. The car body was made of stamped and formed sheet metal finished with hand soldering. The floor consisted of a very fine sanded rectangular piece of stained wood, the only wood found in the entire car. The steps and platform were made of one piece sheet metal processed similar to the car body. The body of the trolley could be removed leaving a simple motorized flat car or work car. A motor unit located underneath the floor of the Howard car made this combination possible.

The No. 1 trolley was patterned after the typical four wheel prototype electric car found in cities and towns in the early part of the 1900's. Very much unlike the prototype, the Howard car lacked one of the most common details—a trolley pole! Since the toy car operated on a two rail track system electrically there actually was no need for an operating trolley, however a dummy pole would have greatly added to the appearance of the car. Beside the platform and steps the trolley presented a rather bare appearance—there were no controllers, ventilators, pilots nor fenders as they were called, nor were there any handrails. The wooden car floor had a tendency to warp slightly under certain weather conditions but this seemed to have no affect on the car's running condition.

The brightly hand painted car body had eight large size open windows—four on each side. These windows were slightly arched and closely followed the design of real city cars. The large open doorways found at both ends along with wide windows, which were held together by thin frames or partitions, helped considerably to cut down the weight of the car body. The gracefully curved roof fashioned of the same tin metal as found in the car body presented a handsome appearance fitting perfectly in spite of the fact that there were no ventilators.

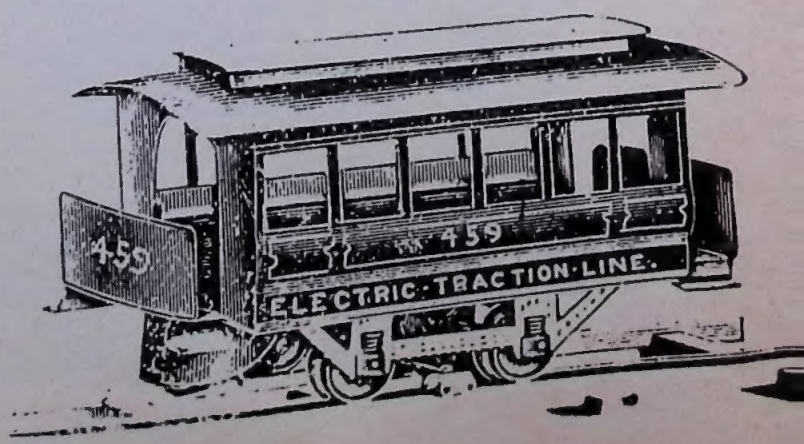
Each end of the car platform had the wording "No. 1" lettered in a simple style. The Howard name did not appear on any part of the car but the name "ELECTRIC R.R." was found on both sides in large letters occupying a space of about one inch in height by almost four inches in length spreading over almost the entire lower half of the car side. A neat border helped to frame the side panel lettering.

Like all other Howard miniature railway toys, the trolley rolled along on a two rail system using one set of insulated wheels. For rail material, polished ribbon steel was used with all trains and trolley cars. Mounted on wooden slotted ties this thin flexible track was capable of easy bends and readily adapted itself to graceful sweeping curves. The wooden ties measured about 1/2x1/2x3 inches in size and were usually stained a green color. The steel ribbon rail measured about 1/2" in height and fitted into the tie slots to about half their height.

Disc type trolley wheels measuring 1-3/8" in diameter were stamped out of strip brass and had reinforced backs for added strength. According to the Howard manufacturing process, each painted wheel was carefully fitted on rigid Bessemer steel rod axles that assured true running wheels. The power or motor unit was found under the floor of the trolley and was geared directly to the drive wheels with hard brass gears. The motor brushes were the simple metal strip type and could easily be replaced whenever necessary. Underframe was made of the strongest possible metal so that it would support the power unit of the car under operating conditions. All Howard motors were of the three pole type (armatures) made up of laminated cut steel plates. The No. 1 trolley, being the smallest of the Howard cars, ran best on 2 to 4 volts and 1 to 2 amperes direct current. The car measured 7-1/2" in length, 4-1/2" in height and 3-1/2" in width. Under full power the car would travel on straight, level track—some 200 feet a minute! This remarkable trolley set consisting of the No. 1 electric car, nine feet of ribbon steel track with ties and two dry cell batteries, sold for $3.50.

Another trolley made by Howard at this time was the No. 2, a larger and more handsome model measuring a foot long, 5-1/2" in height and slightly wider in body width than the No. 1. Although the car was listed as No. 2 in the Howard catalog, the numbers 459 appeared lettered on both sides as well as on both end platforms. Both car sides had, in addition to the numbers, neat lettering "ELECTRIC TRACTION LINE" along the lower border of the side panels, not to be confused with the No. 1 car.

The motor was featured as a self starting one with a reverse lever which was considered an important extra value in those early days. It took a minimum of three volts to operate this larger size trolley, but, because of its weight, it could not run faster than the 200 feet per minute speed set by the No. 1 trolley.



The higher price No. 2 trolley had more to offer in the way of added detail. There were regulation seats that faced each other giving the car a more life like atmosphere. The under carriage had a sweeping trolley fender or cowcatcher, patterned after the real ones, a very desirable detail that was almost always absent in the early trolleys. Another rather important detail was the highly embossed rivet detail found on the truck frame along with coil springs located over the steel axles.

Unlike the smaller trolley this big job had six open windows on each of the car sides, all of which were the rectangular style. A quite distinctive roof marked off the No. 2 trolley, plain and simple in design with plenty of sharp angles.

Basically both cars were made of the same materials but the larger car was finished just a little better with three different color paints plus some neat hand trimming that really gave the No. 2 some high polish!

Realistically the reverse control lever was located right on the front car platform and operated on the right to left side action principle. Because of the open type construction of the motor frame and the easy access to the moving motor parts, oiling and maintenance in general was hardly any problem Quite unnoticed at the time, this light construction was really one of the most attractive mechanical features of the Howard trolley cars. Although the trolley cars were seldom run continuously over long periods of time (because they were all operated with expendable dry cell batteries) the car motors never had much of a chance to over heat.

In operation the trolley cars were not quite as appealing as the more interesting and elaborate freight or passenger electric trains. Perhaps their sales appeal depended upon their lower cost.

From a manufacturer's point of view, there were practically no accessories to be sold with trolley cars in those early days whereas in contrast there were a great many toy train accessories in the form of switches, tunnels, stations, bridges, extra cars, semaphores, etc., all of which were made available to the owners of Howard electric trains. The firm actually did list a special outfit, if it could be known as such, consisting of a double loop that came equipped with a 90 degree crossover track and a metal station that housed a two arm electro magnetic signal along with the trolley car and dry cell batteries. The entire set sold for $6.55 if the No. 1 motor car was selected or $7.80 if the larger car was included. The station was furnished with a special track which activated the signal arms when the wheels of a trolley passed over the track section. The story of the Howard Mfg. Co. is one of vision and hope and it was only too sad that the firm had such a short but fruitful life during the early pre-World War One days. The small firm had much to offer as an enterprising manufacturer of railway toys.

5 - HOWARD TRAINS

Howard also introduced the illuminated headlight on their locos: a feature quickly adopted by most other makers.

SHORTLY after the turn of the century, a somewhat insignificant down-town Manhattan electric novelty firm with the plain descriptive title "The Howard Miniature Electric Lamp Co." of New York City, embarked on a short, shakey, but interesting career of toy electric train manufacturing.

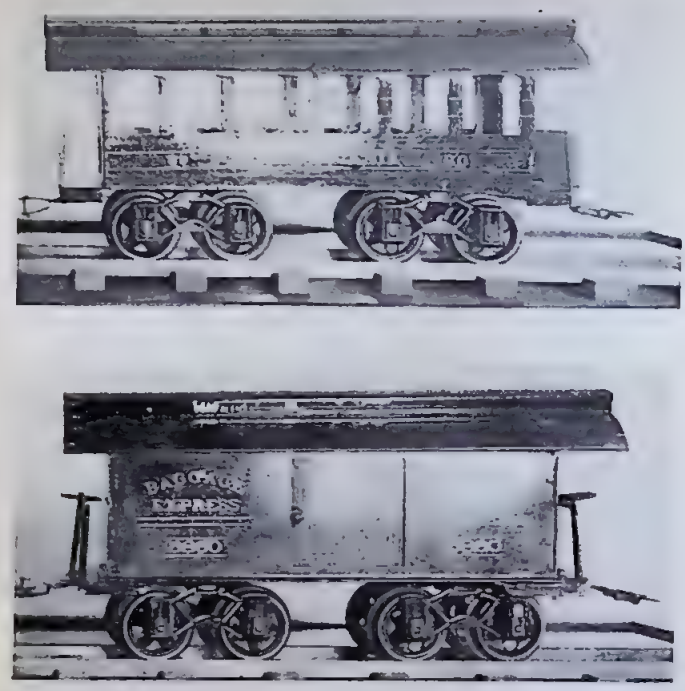
The firm mushroomed into the toy electric train field through a series of circumstances which seemed to have affected several similar electric novelty goods manufacturers at that time, all of whom turned to electric miniature railway manufacturing to various extents.

Howard started as a maker of miniature incandescent lamps at a time when such dazzling electrical marvels along with gripping induction coils and whizzing toy motors were the latest craze in parlor tricks and entertainment. They then began to delve into the realm of toy train and trolley car production when they first suspected that the electric toys began to migrate from the family parlor social circles to the solemn kitchen table where they were given more serious study and attention by the curious converted amateur electricians who, incidentally, were to represent the first mass market for these electric railway toys.

Along with their combination volt-ammeter, miniature lamp receptacles, sockets, induction coils and various other sundry electrical apparatus, the humming Howard factory brought out as complete a line of 2" gauge two rail track operated electric trains and trolley cars as could be imagined in those early days when an electric spark caused as much excitement as the then popular talking machine or early phonograph.

Although the Howard firm had a rather short life, it nevertheless was a most industrious and exciting one. During the odd decade of years of its existence, it not only

Howard is one of the oldest and least known American manufacturers, dating 1904-1907. 0-4-0 is one of their later pieces, their No. 6 listing at $7.50. No. 21 Gondola sold for 60 cents. NO. 22 coach and No. 25 caboose are also shown. Collection of Joe Augustine.



Two Howard cars, No. 60 Pennsylvania Coach, and No. 5860 Baggage Express Car, both dark red in color, on Voltamp trucks.

changed its entire management but it moved its entire plant and equipment at least a half dozen times. Somehow between packing, unpacking and moving crates, the firm found time to keep up an amazing barrage of technical improvements with an aim toward better toy electric train products. In the short record of just a few years, Howard produced at least three different passenger and freight car couplers along with an operating electric locomotive headlight.

Without too much thought, it seems quite natural that the Howard Company, originally a miniature electric lamp fabricator, should rightfully be the first to introduce a successful working headlight. As might have been expected, this innovation caused quite a ripple in toy train manufacturing circles. Hardly had the first Howard miniature electric locomotive lamp come to a flickering end when the sensational idea was promptly copied by alert competitors of similar toy electric railways. From this humble beginning and with the passing of time, the electric headlight became an almost inseparable part of the locomotive. One very interesting fact remains: of all the early twentieth century toy train manufacturers, Carlisle & Finch was the only one that never made electric headlights for their locomotives.

Crowded into these relatively short years of toy railway production were at least four different electric trolley cars, an electric type switch engine, two steam type switch engines, a fast express type passenger engine, a short simple type of baggage car, a matching passenger coach, a long more elaborate type baggage car, chair car and a deluxe pullman palace car. In freight cars, Howard produced a rather complete set of main line units that included a flat car, box car, gondola, oil tank car and a caboose, plus a short four wheel operating side dump car. The Howard line of accessories included right and left hand switches, a unique "Y" shape switch, a station with an automatic electromagnetic block signal, a crossover track and a bumper track section, rail connectors plus the regular steel track and wood ties. All of the electrical equipment was operated by means of either wet or dry cell batteries—usually of four to eight volts.

One of the rolling wonders of the Howard line of locomotives was the tank type steam switch engine listed as the No. 6 in early Howard catalogs and literature. Having a rather uncommon wheel arrangement, the No. 6 (4-2-0 type) had a peculiar condensed appearance—at least to the uninitiated miniature toy railroad fan, perhaps very likely because of its combination tender and cab type of construction. The engine was considered a light weight model weighing about 1-3/4 pounds, measuring some 10" in length and with an overall height of 4-1/2".

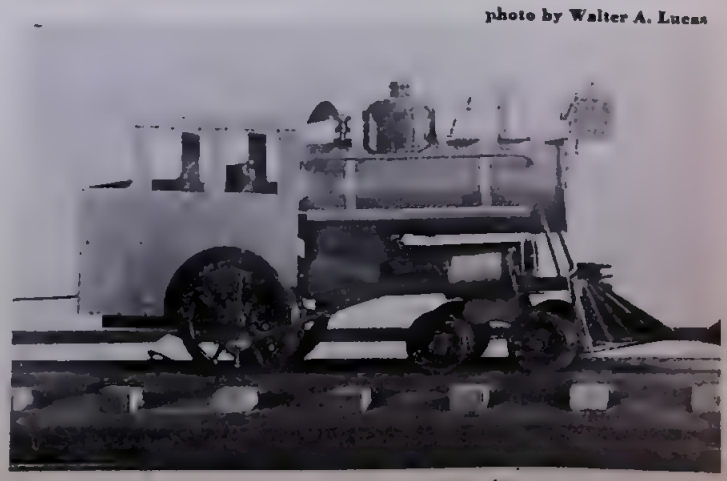
Typical Howard construction restricted the essential materials to sheet metal, brass, iron and wood. For operation, the electric motor required 4 to 6 volts at one ampere and usually 3 or 4 dry cell batteries were recommended by the manufacturer. Although the firm did not manufacture such batteries, they were recommended because of their safety; being free from the dangers of spilling the electric shock. The Howard motors were made with fields of cold rolled steel and armatures from laminated steel stampings. Because of their construction, they were considered quite efficient motors as compared with those motors made by other manufacturers who employed solid iron armatures. Howard actually claimed that their 3 pole self starting electric locomotive motors required about one-third less current to operate. All Howard locomotive wheels were made of solid cast brass, machined, and measured a large 2-3/8" in diameter. By this token, these wheels differed from other early toy locomotive wheels which were usually made of machined cast iron and of a smaller diameter. These Howard wheels were geared direct to the motor with hard brass gears which were efficient when well oiled but somewhat rackety in motion. The pilot wheels measuring 1-3/8" in diameter, were fashioned of heavy formed sheet brass with reinforced backs very similar to the later date popular tinplate car wheels, and were mounted on insulated Bessemer steel rod axles. These features of Howard construction were proudly expounded in the early Howard catalogs and literature.

Year after year, the No. 6 switch engines turned up as the popular and least expensive of the Howard electric locomotives. Lacking the finer eye appealing details of the larger more expensive models, these No. 6 engines had plain boilers and were devoid of all rivet detail, nickle-plated boiler strap bands and even the lowly common engine bell!

The high open windows of the engine cab with narrow frail frames without any reinforcement gave the cab an uncomfortably weak and fragile overall appearance. The broad, bold lettering "B&O RR" along with the stripe trim

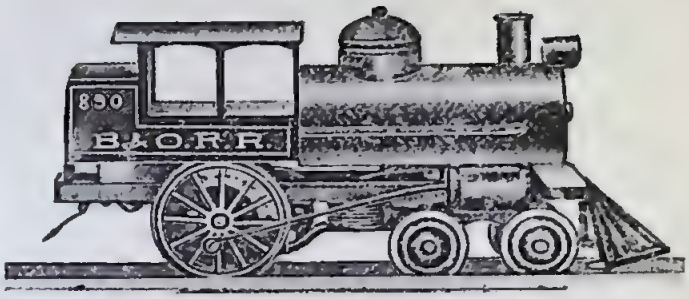
Early series Howard probably with paint removed from cab. Howard is generally credited with being the first manufacturer to provide working headlights in locomotives. 4-2-0 type, one of earliest Howard locos, is found with No. 3584 rubber stamped under cab window.

photo by Walter A. Lucas



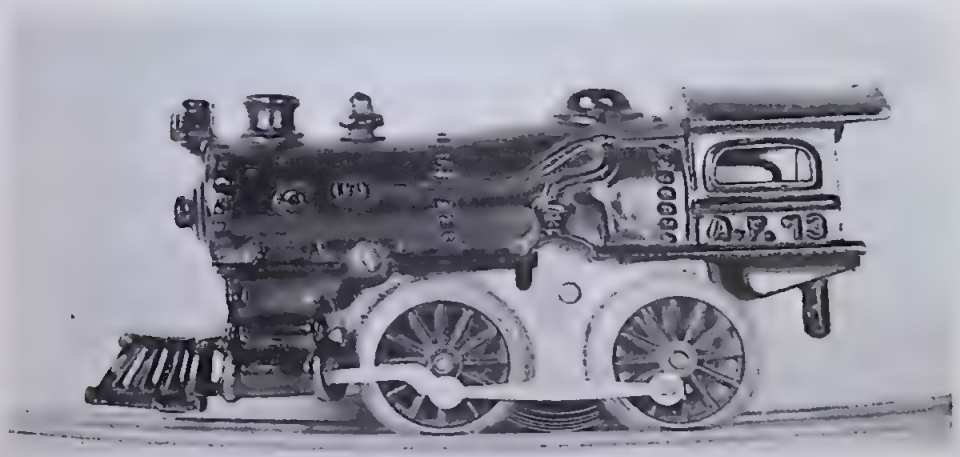
occupied a greater part of the plain sheet metal surface of the engine tank and cab sides. In addition to the impressive railroad prototype lettering, some models of the No. 6 engine were lettered No. 890 which for no apparent reason only served to confuse the buyer using the Howard catalog. Along with the No. 6 engine, Howard sold a complete freight train set which consisted of a No. 21 gondola, No. 24 box car, No. 25 caboose, 18 feet of shiny steel track and 5 dry cell batteries. The flexible steel ribbon rail with wooden ties could be laid out either in the form of a circle or an oval. The outfit complete with the No. 6 engine was listed as the 104 freight train set and priced at $8.60. The fact that Howard failed to furnish any battery rheostat with their train outfits seemed indeed rather strange as a rheostat could have contributed an immense amount of attraction to the train in operation by providing variable speeds. Perhaps the firm reasoned that the toy operators could regulate the speed of their trains by the addition or subtraction of the amount of dry cells wired to furnish the electric power, which of course was possible but certainly hardly a very efficient method.

The freight cars were essentially made of heavy sheet metal and were hand soldered, painted and properly lettered for the "N.Y.C. & H.R. RR." Wheels were all 1-3/8" formed brass with reinforced backs identical to the locomotive pilot wheels described. Trucks were all brightly nickel plated although of a plain stamped design with just a faint resemblance to any detailed prototype. None of the cars had any underbody detail such as truss rods, air tanks or center channels, in fact, the only detail that lent any realism to the gondola and the box car was the brake wheel.



The rather strange looking Howard No. 6 in a catalog drawing.

6 - AMERICAN FLYER'S UNSUPERSTITIOUS NO. 13



American Flyer's No. 13 clockwork steam loco was simple in construction and came in several variations.

American Flyer's cast iron No. 13 clockwork loco has long been a favorite with collectors. The engine is found in several distinctly different variations. Tender and cars were tinplate litho.

DURING the early 1920's a most curious thing happened in the design department of the industrious midwest toy train plant of the American Flyer Manufacturing Company of Chicago. Amid the various models of clockwork and electric toy locomotives, the firm brought out a number 13 model cast iron wind-up engine of the four wheel type. The engine number, at first glance, was difficult to believe—but there it was in bold raised gold letters, just underneath the engine cab windows— A.F. 13. Why the firm chose to use the so-called superstitious number on this particular locomotive is a matter of speculation and is always a subject for stimulating discussion among the more serious tin plate collectors.

The first American Flyer No. 13 locomotive along with a No. 120 four wheel tender was sold in several popular sets making up both freight and passenger trains—all of which were equipped with four wheel cars. This strangely numbered engine came furnished with a hand brake, located in the engine cab, and operating side drive rods. The No. 13 original model had a raised roof ventilator on the engine cab that gave the engine a more realistic appearance. Unfortunately the later model was simplified and redesigned to such an extent that the cab ventilator was lost. Engine cab windows which were partitioned in the earlier model gave way to a single one piece large window. In spite of these gradual changes in engine design occurring over a period of years, the total length and, in general, the original dimensions of the No. 13 engine did not change to any extent. From the point of the pilot to the edge of the cab roof the engine measured a full seven inches.

The transitional period in clockwork toy train manufacture occurring in the early 1920's had a strong influence on the design of the later modified No. 13 model. It was shortly after World War I that both German and American toy train manufacturers began to strive for simplicity in engine construction. The fine elaborate and detailed engines of the racy eight wheel type were gradually discontinued as factory production was slowed down to make way for the electric trains which were gaining in popularity every year. Track trips, manual reverse cab levers and other early interesting gadgets that had delighted toy train fans, began to rapidly pass out of the clockwork train scene.

Like all other American Flyer trains, No. 13 came packed in a colorful labeled box that had the wording, "The Train With The Guarantee," a sales appealing phrase that was the pride of the manufacturer. The fact that A.F. trains were guaranteed to operate satisfactorily helped the firm to market its toys extensively.

No. 13 was actually the largest of the lower priced loco-

motives in American Flyers big clockwork roundhouse and though it was quite powerful it was not designed to haul more than simple four wheel type cars.

The early cast iron machined drive wheels of the No. 13 were gradually replaced by cheaper die-cast wheels which failed to measure up to the original standards. The supposedly minor nickelplated boiler straps of the initial No. 13 engine began to disappear and in place only the rivet detail remained.

Blazing gold painted raised letters "A.F. No. 13" on the engine cab sides stuck out like a sore thumb, yet the engine sold quite well in spite of its peculiar number. The engine had a riot of contrasting color and gleam. Dull silver of the die cast wheel rims was sharply offset by the brilliant red color of the drive wheel spokes and the bright nickelplate finish of the side drive rods. Black reflecting enamel of the engine body trimmed with gold paint was further enhanced by the shine of steel found in the motor-box. Gold paint was used to simulate the color of brass in the prototype engines as in those days a locomotive without shiny brass trim was hardly thought possible.

The blue steel coil spring located just underneath the steel motor plate was always visible whenever the engine came to a stop after a full winding was spent.

Winding up these locomotives was always done best in a special manner. For good operation, the engine was never wound up on the track, but instead it was picked up and held in the hand. With the brake lever set firmly in place, the removable wind up key was screwed into position. The winding, from left to right, was invariably accompanied by a clicking sound as the ratchet mechanism came into play. After a full winding the steel spring would be fully compressed and coiled. The engine was then placed upon the track and coupled with the tender and load of cars. With caution the brake lever would be carefully released and the train would quickly gain momentum as it whirled away on the tinplate track. Since all the Am. Flyer clockwork engines were equipped with an automatic speed governor, it was impossible for the train to exceed a given speed, although of course the train speed was also governed by the total number of cars hauled by the engine, the presence of curved track, switches, and elevations.

The engine itself weighed about 20 oz. not including the tender or the windup key. This weight was well distributed throughout the locomotive and traction was never any problem as long as the tinplate track sections were kept free of oil and grease. The large 1-1/2" diameter drive wheels with 12 spokes seemed to be adequate both from a standpoint of design and function. Because of their die metal construction, these drive wheels were not quite as noisy as the old cast iron machine wheels.

The AM. Flyer Mfg. Co. recommended oil as the proper lubricant for these engines, but many toy train owners found that grease or vaseline used as a lubricant helped to cut down on the whirling gear noises but unfortunately dust, lint and dirt were attracted too easily by these lubricants.

No simpler construction could challenge the No. 13 A.F. engine as it left the factory looking smart and compact. The height at the engine cab was 3-1/4" allowing enough room for a small simulated fire box found underneath the engine cab. This fire box was unfortunately left undeveloped—not a trace of any detail was visible, as much as it was desired. The greatest width, as in similar locomotives,

American Flyer cars sold with the No. 13 included the 1116 Gondola, 1112 Refrigerator, and 1114 Caboose. Cars were litho finished in railroad colors excepting the American Flyer caboose.

This is the first locomotive made under the name of the American Flyer Manufacturing Company: an O gauge clockwork made in 1910. American Flyer history actually dates to 1907 when American Flyer was the trademark of Edmunds & Wetzel Manufacturing Company of Chicago, a hardware concern. AF followed with electric trains in 1918. The A.C. Gilbert Company took over American Flyer in 1938, ceasing production about 1965.

was at the steam chests and measured at slightly over 2". This measurement was just a little shorter than the width of the protruding car axles which usually extended at least 1/4" on each side of the car body.

The cast iron engine body had most of the essential super structural detail plainly cast in relief. There were steam pipes, valves, rivets and a faint resemblance of a catwalk along the boiler side. The boiler had a tapered appearance from front to back and was amply covered with rivet detail. The front boiler plate was truly a masterpiece reproduction of the real type even though it was but a small part of the entire body casting which incidentally consisted of two half pieces held together by a single iron rivet placed just below the smoke stack. This rivet was placed for advantage at the greatest diameter of the front section of the locomotive boiler. Huge eye-filling rivets looking as though they had been magnified, took the place of the nickelplate engine boiler straps of the earlier models.

The motor-box containing the clockwork mechanism was held to the castiron body by one short machine screw with the addition of two projecting flanges or extensions of the steel plate fitting into the cast iron body at the engine cab section.

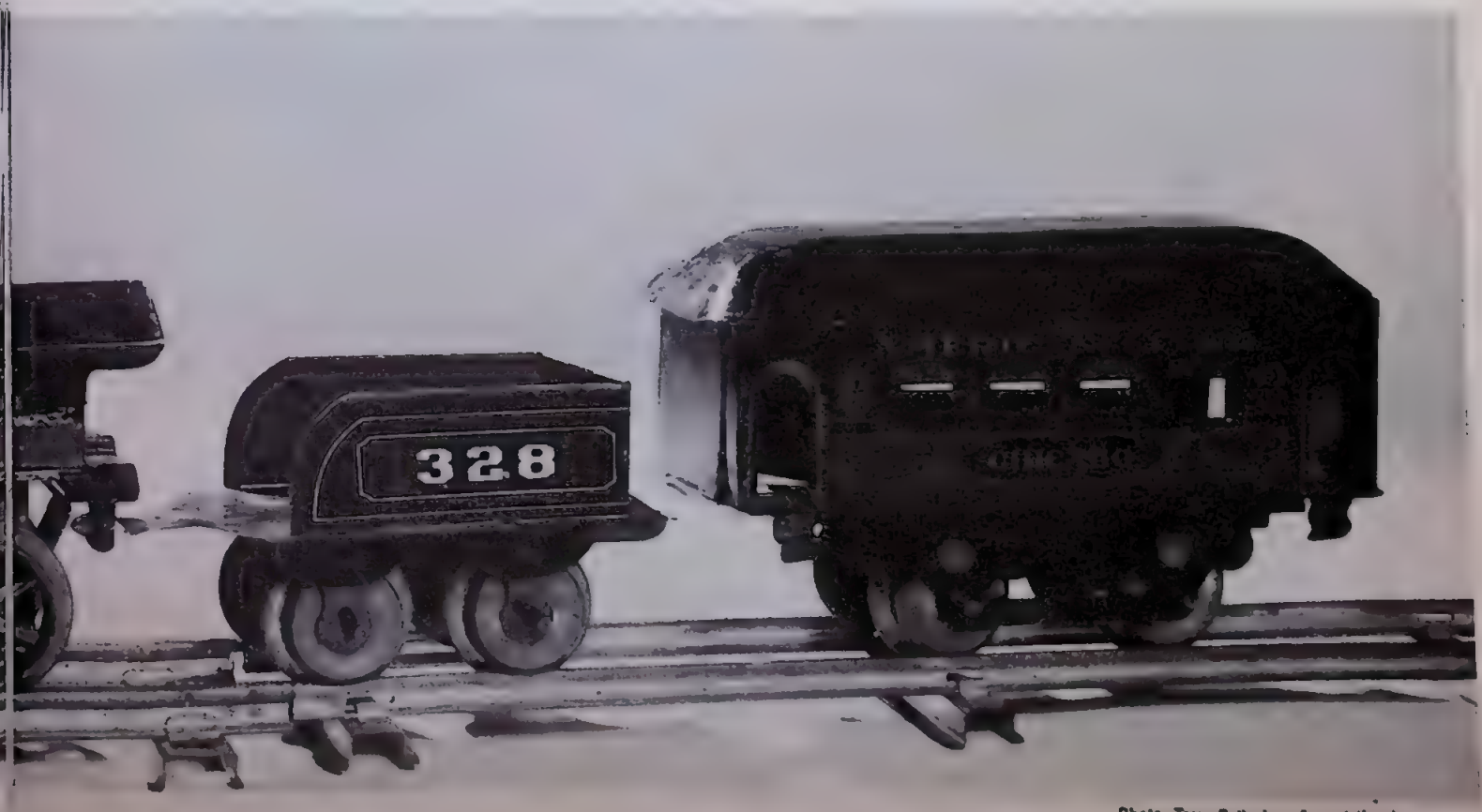
The engine tender was No. 120 and served several different A.F. locomotives. It was constructed of three separate pieces of sheet metal die cut and embossed. One piece was used to make up the floor, underframe and axle support. Sides and end were formed from another piece. A rectangular embossed sheet metal piece fashioned to represent a pile of coal, completed the tender; lithographic finish was black with red and white trim. Sides and end of the tender had the number 120 in plain view; with wheels, axles and couplers, the total weight of the tender came to about 2 oz. Body measurements were 3-7/8" in length, 1-7/8" in width and 2-5/8" in height. The front coupler was an eye hook type while the rear was a regular A.F. hook unit.

A gondola car, weighing twice as much as the tender, was beautifully lithographed in red, black and white. Like all cars of the series it was 6-1/2" in length and had a width of 2". Height from the outer rim of the car wheel to the top of the gondola sides was 2-1/2". Body construction was rather simple. There were two half pieces of lithographed sheet metal making up the car sides. These were joined by metal fingers or clips. The car wheels used on the A.F. cars were made of pressed tinplate and were 1" in diameter with a thickness of 1/4" giving the illusion of great strength and weight, but actually their hollow construction made them very light.

Couplers on all of the O gauge tenders and cars were the hook type but of a design that was rather different from other similar toy couplers. A.F. couplers were stamped out a little more elaborate in design and perhaps were just a bit heavier in construction when compared with those made by Ives and Lionel. Without question the most interesting feature of these couplers was their retractable nature. Unlike other couplers the A.F. models were not attached at one fixed point, but rather were mounted in a sliding slot cut in a straight line from the floor of the car at each end. The slots were machine cut and extended for a good section of an inch in length. With this unusual feature the couplers could be retracted practically flush with the car end pieces.

The refrigerator car was of the same length and width as the other freight cars except for the height which came to 3-1/4". The 6 oz. car was expertly lithographed to simulate wood sheathing and came finished in black and white. Patterned after a typical prototype reefer of about 1913 with N.Y.C. lettering it was perfect in every respect except that for some reason the operating side doors of the car were left in plain white finish without any wood scribing.

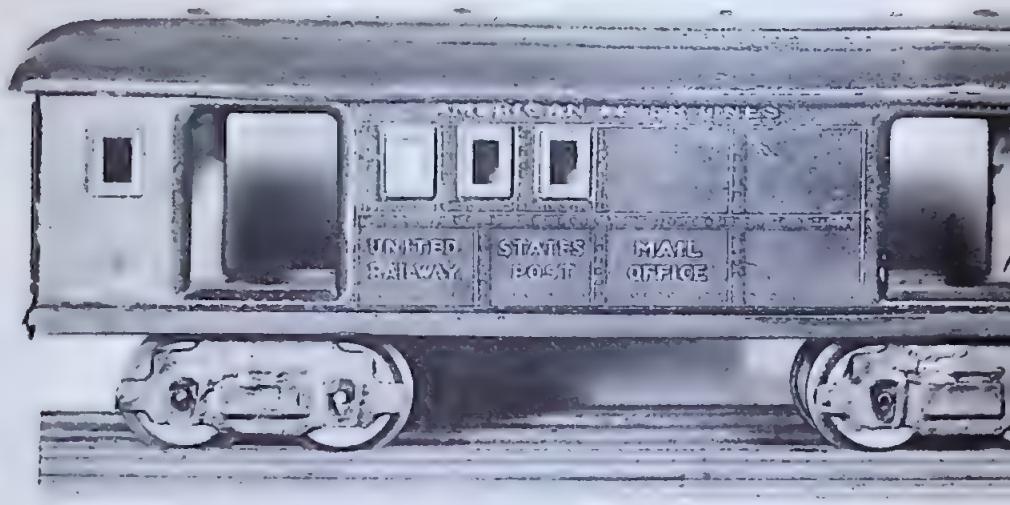
The last car to make up the train was the caboose listed as No. 1114. This was the most colorful of the A.F. freight cars brilliantly lithographed in red, orange, yellow and black colors. The "Flying Engine," the American Flyer trade mark, was given a prominent display on the sides of the caboose. Each side of the body had four stamped out windows and both car ends showed two simulated windows and a door on each platform end. The high cupola had ten windows all nicely lithographed but none were stamped out.



Photo, Train Collectors Association Inc.

7 - AMERICAN FLYER'S DELUXE 3020

American Flyer's big 3020 O gauge electric loco remains today a big and impressive engine.



ALTHOUGH the American Flyer Manufacturing Company was founded in 1907 it wasn't until some 15 hard selling years later that America's fast stepping Mid-West toy train leader brought out an electric O gauge model locomotive of more than the customary four wheels. Previous to this time, the Chicago firm strongly believed that the most practical and successful toy electric locomotive had to be made with four wheels and a short wheel base and anything burdened with more than four wheels would hardly be a worth while toy. It took some tedious years of cautious experimenting behind closed doors along with competition from other manufacturers before the new twelve wheel 4-4-4 electric type engine appeared on the toy market.

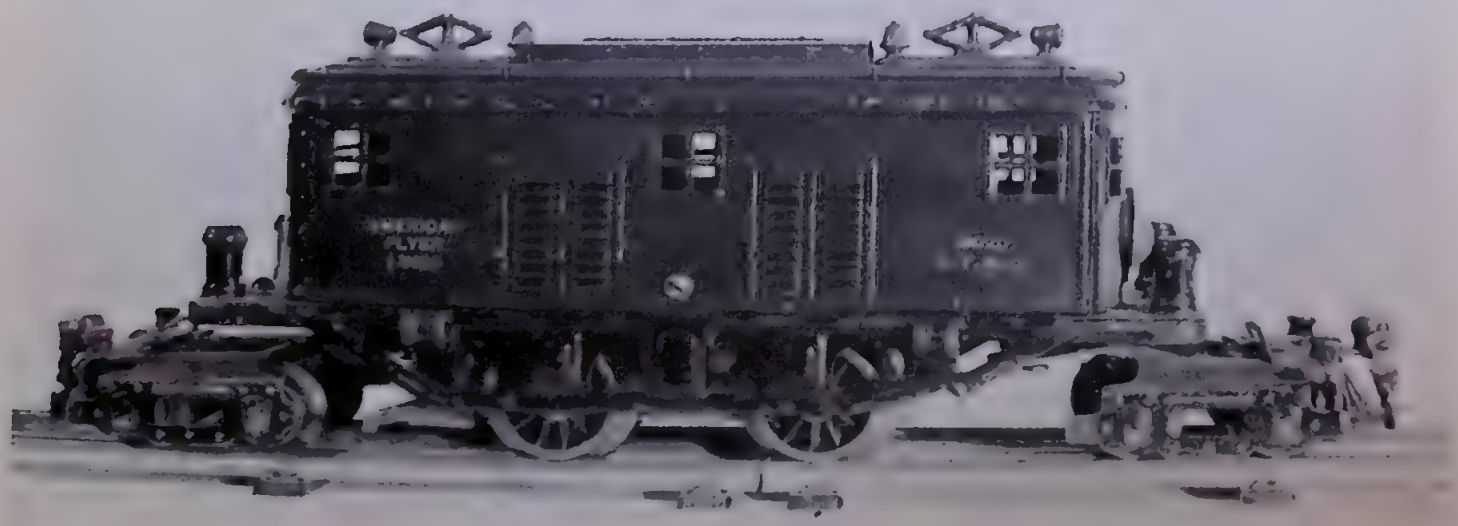
The longing response to this mammoth O gauge box type electric locomotive was evident almost at once, and overnight American Flyer had a deluxe engine that filled not only the slick pages of its catalog but truly the heart of every boy. At the time that it was introduced, the firm made no standard gauge models and this No. 3020 engine was the longest and biggest O gauge engine made, surpassing the then current Lionel and Ives models by a noticeable margin.

In its plush Fifth Ave. New York City show rooms and offices, the A.F. company introduced its new luxury model No. 3020, along with a set of swank No. 3000 series passenger cars, to eager cigar puffing store buyers who were quick to appraise the new king of the tinplate rails. The twelve wheel locomotive and its set of three passenger cars, stretched along 48" of tinplate track laid on the freshly painted display table, were a handsome contrast to the other small sized trains of the American Flyer Lines, none of which could compare in size, fine detail, nor finish. As was expected, the big twelve wheel electric locomotive stole the display show and side pausing glances from everyone.

For the first time in its history, the firm was using a cast iron body in its electric outline locomotives. Although American Flyer had been using cast iron engine bodies since its beginning, this method of construction had been limited to its steam type locomotives. Every one of the four wheel electric type engine bodies was formed from heavy pressed steel.

In sheer weight the No. 3020 A.F. exceeded that of Lionel's popular No. 156 which was also a twelve wheel electric engine. In operation its heavy rumble could be distinctly heard especially when the twelve wheel engine passed over switches or crossover track sections.

The No. 3020 locomotive was assembled on the factory bench in several sections—the main body or shell, the underframe section with its cast-in detail, a roof section, front and rear pilot trucks and the motor unit with drive wheels. The motor was the largest and most powerful of its kind made in A.F. O gauge engines. Unlike the early motors, power was applied to all four of the drive wheels. The main body had considerable detail which included body rivets,



American Flyer's big 3020 stands too high to clear many O gauge bridges. Offered in several colors, the engine is usually found with the 3000 Baggage Car, 3081 Pullman, and 3085 Obs.

large panels of side ventilators, open windows of the four window pane type, and nickelplated hand rails. The arched or rounded roof was neatly fashioned and contained all of the essential super structural detail that was copied from the blueprint of the prototype. There were pairs of every thing; a bell, headlight, and pantagraph. Each in its appropriate place, all were dummy types made of cast metal. The sheet metal roof had a raised vent section in about the center. A round nickelplated rod practically formed a sturdy trim on the roof edge.

Although remote control of the No. 3020 engine, along with other O gauge American Flyer engines was still in the distant future, the engine could be reversed by a hand lever located alongside the motor wheels. This steel reverse lever was located low enough on the engine so that it could engage a track trip to reverse the engine running at any speed, at any set distance on the track. This novel reversing method was to remain popular until the invention of remote control systems.

As in all the early American Flyer electric type O gauge engines, the familiar recessed operating headlight occupied almost a third of the front end section of the No. 3020 twelve wheeler. Big flashy, and powerful, this bulb-in-socket headlight with its dazzling nickel plated metal reflector illuminated more track side area than any other comparable toy electric engine manufactured. This was an important patented American Flyer feature that was clearly brought out in the early editions of Flyer catalogs, and in the firms advertisements.

While all A.F. O gauge electric engines came equipped with pressed steel underframes having embossed steel details, the No. 3020 engine was actually in a class by itself with its heavy cast iron underframe loaded with fine detail incorporated in the casting. This No. 3020 was the only O gauge engine that came equipped with four miniature sand barrels, two on each end of the engine platform. These barrels were made of cast iron and were really part of the heavy underframe.

The front and rear engine trucks were a combination cast iron and sheet steel affair; the pilot made of cast iron was riveted to the one piece press steel truck. Truck frames were nicely embossed with eleven rivets and essential journal boxes. These very attractive trucks were fitted with patented semi-automatic couplers that were, of course, American Flyers claim to distinction. Indeed, these special A.F. couplers could not be interchanged nor made to work with other toy train couplers. As a matter of fact, these couplers were designed only for the No. 3020 engine and its set of No. 3000 series cars. In this respect they were useless with other A.F. O gauge car couplers!

In the original factory design of the No. 3020 engine, the pilot trucks were placed well forward of the drive wheels on each end giving the locomotive a length of 12-3/4" which was somewhat of a record for this type of engine. Fortunately in this design the main drive wheels were properly spaced so that the finished engine presented a pleasing and balanced appearance as it flashed by on a straight track or roared away on the curved track sections. In operation, little trouble was experienced in keeping all of the twelve engine wheels running smoothly on the rails, providing that the wheels were well oiled and that the pilot arms (attaching pilot trucks to engine body) were not binding. Very often due to careless handling, the truck arms were bent out of alignment.

Green enamel proved to be a favorite finishing material for the engine body along with black enamel for the underframe and trucks. Main drive wheels were finished in bright red and had nickel plated steel rims or tires. Handrails, handrail supports, steel pilot truck axles, and the patented A.F. couplers were all finished in gleaming nickelplate. Windows in the engine were decorated in an orange-yellow color, which was also used in the rubber stamped lettering found on the engine sides. One end of the engine had "American Flyer Lines" neatly lettered in three rows, while the other end of the engine had "3020 A.F.M.C." lettered in two neat rows. This latter abbreviation was for the complete firm name, American Flyer Manufacturing Company. This lettering, a plain gothic style, appeared on both sides of the locomotive.

Occasionally, these big O gauge electric engines were finished in maroon or black color and few were rarely colored in orange-yellow with red window trim and lettering.

The No. 3000 series passenger cars made especially for this locomotive were long, slender 9-1/2" eight wheel cars with lithographed bodies so rich in detail that they would compare favorably with the fine scale model cars of today. All these tinplate cars were assembled at the plant without the use of solder. Car bodies were held together by means of metal fingers and stamped out slots. Each car body was made up of two lithographed sides (really two "L" shaped sections), a single floor section and a one piece die stamped roof. The roof had four mushroom type ventilators just large enough to show up as nice detail and small enough to be incorporated in the one piece construction.

While many tinplate cars had floors made of a single piece of metal which was usually of the same gauge as that of the rest of the car, the No. 3000 series cars had floors that were reinforced with two rectangular steel plates located just at the point where the trucks were attached to the car floor. These steel plates could be easily seen inside the car after removing the roof. In addition to strengthening the floor, the steel plate gave some weight where it was needed most, just above the trucks. Trucks were made of a single piece of embossed steel and were the largest O gauge trucks made by A.F. Their long nibs gave the trucks an illusion of great length. By comparison with other trucks of leading manufacturers, the A.F. units were about average in detail, and were finished in standard black enamel.

When the new train set appeared on the market, the firm produced three cars, these were the No. 3000 baggage mail car, a No. 3081 pullman, and a No. 3085 observation car. In some catalog editions, these cars were numbered differently, for example, the No. 3000 mail car became the No. 3080.

The interior of all cars were coated with white enamel—an ideal reflecting surface for the individually lighted car interiors. The common third rail roller pickup, shared with other tinplate manufacturers, was used to illuminate the No. 3000 series.

Each car left the factory equipped with air tanks and vestibule steps, except the mail car which had only the two

air tanks, one on each side. While the tanks were of fairly good proportions and looked pleasing to the eye, car steps were a disappointment as they were entirely undersized.

In American Flyer history, the height of lithographic perfection seems to have been reached with the production of these 9-1/2" passenger cars! Every rivet, steel plate section, window frame, door panel, every molding showed up so clear and sharp that one was almost tempted to feel all this fine detail. Yet, it was hard to believe that this mini-detail was the result of using various shades and tints of basic lithographic colors. Of course, the fine smooth surface of quality tinplate used in the process helped.

Of all the large series passenger cars that were sold as sets with the No. 3020 engine, the mail car was one of the most interesting. This car had four operating sliding doors and eight windows. Four on each side. Across the upper most panel, the following wording appeared "American Flyer Lines;" this was just underneath the roof edge. Lettering was rather condensed and did not stretch across the entire car length but was carefully centered. The lower panel underneath the windows had much more lettering which was not as optically balanced. "United States Mail" appeared on one line and "Railway Post Office" on the other. End sections of the mail car had no doors but did have a simulated doorway which was embossed. A lithographed brake wheel appeared on the end sections. Also found on the end sections were the following notations: A.F.L.. Made in U.S.A., and No. 3000.

Perhaps what made this mail car so popular was the patented mail bag catcher and mail bag made by the firm. This accessory consisted of a "catcher" a steel clip device that fit on the rear door of the mail car, and a die cast mail bag that was suspended from a "frame" which was fastened on to the bottom of the track. In action the mail bag would be pulled into the open car door by the catching arm.

8 - AMERICAN FLYER'S WIDE GAUGE

Flyer was the last of the Big 3 Makers to plunge into Wide Gauge trains: items eagerly sought by collectors of today.

As the cold, racy, late fall wind rattled the hundreds of glass window panes of the upper stories of the American Flyer Manufacturing Co. brick building, the loud pounding noise of the heavy stamping presses seemed to drown out the effects of the battering Chicago wind. The time seemed right to launch the first of the standard or wide gauge electric trains of the great American Flyer toy train lines.

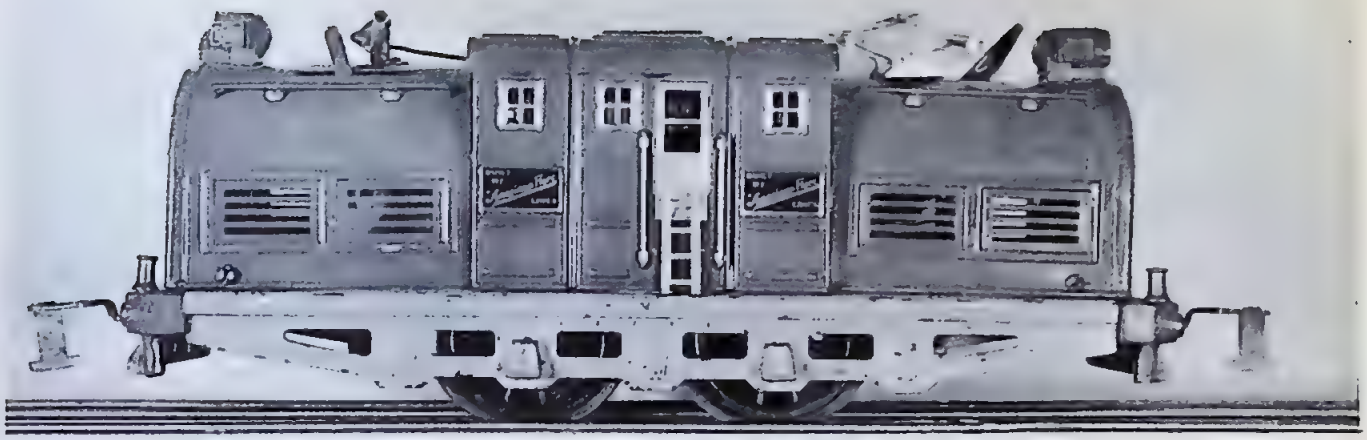
American Flyer's No. 4000 was a big engine, as were the matching stamped steel, lithographed passenger cars. An observation car was also offered. Colors included maroon, green, and rarer orange.

There was little applause back in that year of 1925 when the mid-western firm, the last in line of the three important toy train manufacturers, firmly decided to undertake the production of wide gauge trains. Shortly before the big size 2-1/8" width trains were introduced to the public, a stir of excitement ran through the factory as workers, whose interest in toy trains failed to extend beyond the important weekly pay envelope, began to discuss the new big size trains during the whistle stop noon period. The workers wondered just how the wide gauge train items would affect their production schedules.

Across the span of heavy work benches, large wooden barrels of engine parts and high racks of tinplate stampings, another surge of excitement centered within the partitioned wall offices of the Company. Haggard, pencil chewing, officials wondered if their capital investment in new tools and dies would pay off profitably since their close competitors, both Ives and Lionel, were already well established in the field of these big size, higher cost toy electric trains. Lionel by virtue of its early patents in standard or wide gauge was the natural leader.

Apparently the fears and doubts associated with the new wide gauge train line began to fade rapidly with the passing months as the firm grew to enjoy a mild sales boom. Within the course of several months, American Flyer was busily producing three different electric 0-4-0 type locomotives in wide gauge. All had the same box or "New Haven" type bodies and each was a creditable example of simple but sturdy construction.

During these early months when the American Flyer wide gauge trains were being introduced to the public and at a time when initial capital expenditures strained the



American Flyer's Shasta locomotive from the Carstens collection is a handsome engine in green with automatic bell.

Company bankroll, the Company wisely held down expenses as much as possible. Although the factory manufactured both locomotives and passenger cars, all of its wide gauge freight car bodies were made in the East by the Lionel Corp., with the exception of trucks which were regular American Flyer passenger car units.

The freight car bodies were really standard Lionel freight cars of the famous reliable No. 12 series. The couplers were the American Flyer patented units. Because of this manufacturing arrangement, the thrifty Chicago toy firm was able to provide a suitable line of freight cars without investing in additional tools and dies at a most critical time.

The new big size line of American Flyer trains was launched with the No. 4000 and the No. 4019 engines, both box-like 0-4-0 types with powerful whizzing motors and long frames. Except for very minor differences such as twin headlights on the No. 4019, both engines appeared, without too much eye strain, practically identical. Because of its lower price tag, the No. 4000 caught the public's fancy almost before the ink in the new catalogs became dry.

Although crude by today's standards, the No. 4000 engine had a stamped heavy steel underframe with embossed rivet and journal box detail. The cowcatchers, with appropriate sand tanks, were made of one piece cast iron riveted to the steel underframe—one on each end. These interesting sand tanks were destined to become a familiar finger-pointing sight on American Flyer wide gauge engines for several years.

Construction wise, at least from a standpoint of economy, the No. 4000 engine left little to be desired and must have indeed been a planning engineer's dream.

One boastful American Flyer feature was the protected headlight (unfortunately missing from the model illustrated). This consisted of a long metal nickel plated shelf that fit over the light bulb. The headlight had green and red side celluloid lenses—nothing really novel at that time except the light bulb was held in a vertical position rather than the common horizontal one found on competitive electric locomotives.

Although brass name and number plates were present on all models, the later more elaborate and higher priced engines had, in addition, polished brass journal boxes and air tanks that actually glistened. The era of flashy brass decor was just arriving on the toy train horizon and was to be shared equally by all the toy electric train manufacturers.

The 14-1/2" length of the long drawn out body and steel frame of the No. 4000 engine gave it a slight edge over the comparative low priced popular engines of both Ives and Lionel. The engine was equipped with a patented track trip reverse—a mechanical stamped steel gadget or reversing the engine automatically at any set distance. The strong huge semi-automatic stamped steel American Flyer couplers proved to be somewhat of an eyesore, bearing no resemblance to prototype couplers. Nevertheless they were effective and trouble free. Unfortunately, the engine had one glaring error—the underframe had ten journal boxes (five on each side) which seemed a little inappropriate for the four actual drive wheels.

The fact that American Flyer played up the theme of "bigness" was no carefully guarded trade secret. Big construction, big value for less money and other cliches seemed to strike every reader of the firm's advertisements during the period. Using the word "wide" gauge instead of standard in its catalogs and advertisements never left the prospective customers of American Flyer trains with any doubts as to bigness or size.

The famous American Flyer passenger cars made during this early period of wide gauge trains were items that will be long remembered in tinplate history. While Ives and Lionel fussed with costly production of their standard gauge passenger cars, burdened with enameling, baking, rubber stamped lettering and other time consuming hand operations, American Flyer oiled its presses, supplied them with the proper inks and watched the lithographed tin passenger cars literally shaping up at high speed. Going a step further to speed up production and cut down on costs, eyelet rivets were used to hold the car sides to the car floor or underframe. No solder was necessary.

The blue ribbon, prize-like lithographed 14-1/4" long passenger and baggage cars were almost breath taking in fine detail design, lettering and mirrorlike finish. By simulating shading on door panels, window frames, etc., the cars assumed a realistic three dimensional prototype likeness at perhaps a fraction of the conventional construction cost. All passenger cars had spring back operating doors at the vestibule entrances while the mail-baggage cars had standard sliding doors. American Flyer believed in plenty of illumination and each car had at least two interior lights. In fact, some of the later models of observation cars had as many as four light bulbs. In addition, to insure the maximum illumination, the inside of the car body was generously coated with dazzling white enamel—the perfect reflecting medium.

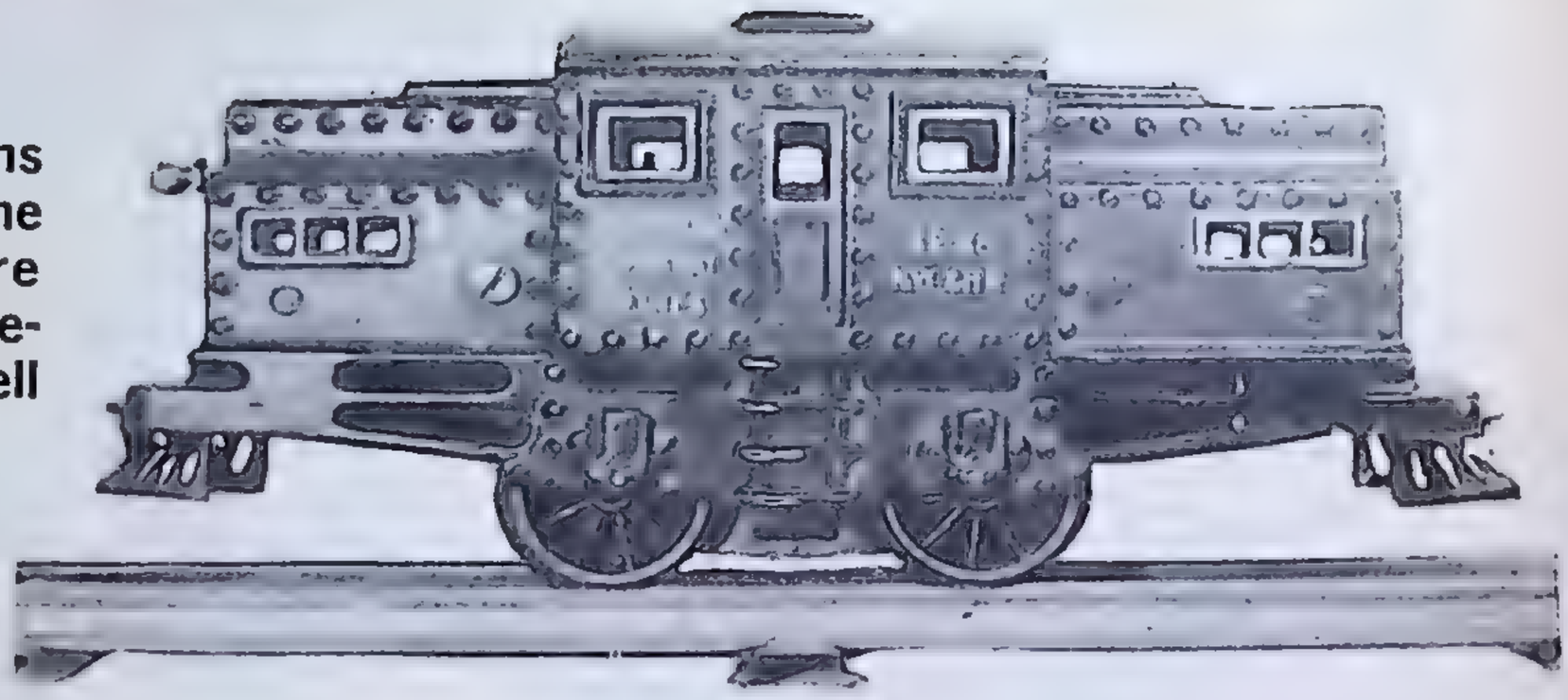
Removable car roofs were held in place by two patented American Flyer cam locks activated by handy levers found on both ends of the car roof.

Although wide gauge passenger cars lacked extra detail such as diaphragms, handrails and battery boxes found on later date models, the few basic details did give the cars a well proportioned prototype appearance with amazing smooth lines.

The passenger car trucks were made of plain stamped embossed steel finished in black japan color. Each truck had two bright nickel plated eye-arresting suspension rivets—one on each side. Unfortunately, these glaring rivets were much oversized and broke up the otherwise smooth lines of the truck.

9 - BING OF THE TWENTIES

German made Bing trains were highly popular in the United States and were unique in many ways. Sometimes they're hard to tell from Ives.



DURING the war torn years of 1914-1918 in Germany, the toy industry along with other non-essential enterprises suffered a virtual collapse.

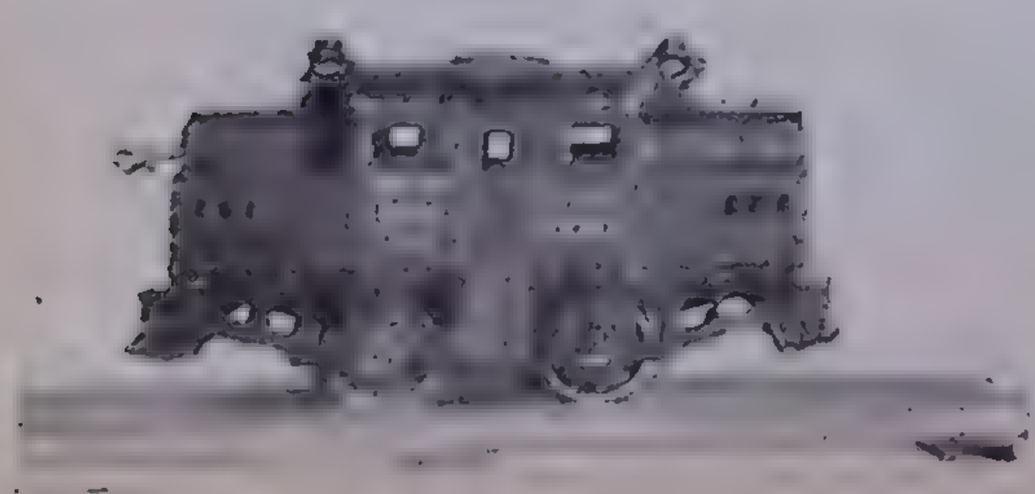
The Bing firm, one of the oldest of German toy train manufacturers practically converted to war work and slowed down its production of scarce metal toys until the peace of 1918. After that time Bing turned back to the full scale mass production of an astounding variety of tinplate trains that left a trail of "OO" gauge track in almost every country in Europe, Great Britain and the United States. At that time the popular double O gauge measured by European rule as 1-1/8" between the rails or just short of the American O' gauge width.

The post war years began with an increasing popularity of the electric outline engine. The interesting steam type locomotive with its wealth of detail and action packed mechanism began to give way to the sleek silent electric type with business like cowcatchers on both ends. The Bing plant lost no time in turning out a line of O gauge engines that were perhaps the closest copies of the then popular iron clad Ives electric types ever made. Of all the American manufacturers, tne Bing firm singled out the old established Ives Corporation and patterned its line to resemble the electric engines that rolled out of the Ives Shops in Bridgeport, Conn.

Due to wise management in those important post war years, Bing thoughtfully continued to produce European types of engines and rolling stock which it shipped to England, France, Spain, Portugal and other continental countries—while still exporting American type equipment to the large prosperous toy electric minded market across the Atlantic to virtually the Eastern half of the United States.

Top: The German firm of Bing turned out a wide variety of American styled O gauge locomotives and cars, many of them amazingly similar to items made by Ives, down to the number 3238.

Below: Small cab 3238 also in cast iron with New York Central Lines Lettering. Bing also made extensive European line of trains.



It was rather commendable that the huge ambitious firm producing such a wide variety of mechanical, electric and steam operated toys could keep up with design changes and the whims of the inventive American competitors. At one time the German firm undertook to manufacture toy steel construction sets similar to those made by Ives prior to the war. Unfortunately the Bing mechanical sets, although they were extremely well made, never achieved a ready market in this toy conscious country of ours, and few were ever imported. The disappointing number of such sets that were brought to America found their way to a handful of the better class toy shops in the East and soon faded from the American toy scene forever. These construction sets are worth mentioning because they made a nice complement to the interesting Bing line of fine quality trains and chosen accessories.

In European countries the Bing trains were known as the "OO" gauge which measured 1-1/8" between the rails—a common standard in that part of the world, and of course very popular. The immense popularity of Bing trains could hardly be exaggerated when the firm printed and distributed tinplate catalogs that ran into several hundred pages packed with thousands of illustrations.

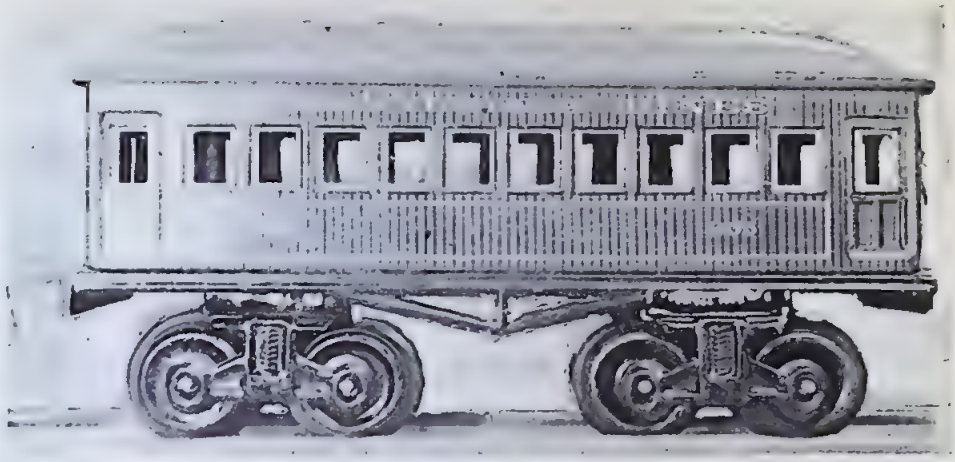
Almost anyone who could peek into the business ledgers of the Bing firm could easily guess that United States and England were some of the biggest importers of the Bing line of trains, so quite naturally these countries were especially catered to in rounding out THE BING LINE of trains and accessories. Every detail with this in mind was attended to in the most expedient manner. For example, when the post war prohibition of alcoholic liquors was enforced in this country, and when such words as "beer" became offensive, the Bing firm neatly blocked out the offending word on its lithographed American beer refrigerator cars. Such example of public relation work won over skeptical buyers of foreign made toy trains. In its day, the Bing trade mark and good will figured well into the hundred thousand mark.

Though there were many sales outlets in America for Bing trains and mechanical toys, perhaps one of the biggest single sources of supply was the parcel post packing mail order houses that loomed out of the expansive midwest region. Next in line as sales outlets were the department stores throughout the country, with the Eastern stores as the leaders.

As a rule, the stores handled the finest selection of imported Bing trains just about Christmas time, along with the rest of the various holiday goods.

The Bing four wheeled cast iron electric type locomotives, were, with slight changes, almost duplicates of the Ives electric engine made in O gauge. Somehow the Ger-

Bing passenger cars were made from two sheets of tinplate metal, lithographed, punched, and shaped into an "el". Litho graphy was clean, with a complete line of American road names.



man toy maker seemed to be charmed with the number 3238 and assigned this number to practically all of the Bing O gauge electric engines regardless of size, weight or power. In reality, Ives did have a current locomotive bearing this exact number in its O gauge line, but it was only one of the various numbered Ives engines made at that time. There were two popular Bing electric types that headed the list of American best sellers; a short stubby type and a long body slender type. The bodies of each of these 0-4-0 engines were made of fine detailed foundry cast iron, two piece castings similar to the Ives bodies. Unlike Ives, Bing made separate cast iron pilots which were attached to the iron underframe casting by two machine screws. In the event of a broken pilot, the matter of replacement proved no problem, whereas in the case of the Ives engine, the entire cast underframe had to be replaced.

The iron rivet detail on the Bing engines was large to the point of being oversized. Each model had a raised roof ventilator but actually without any opening. Very obvious polished brass manual reverse control knobs stuck out of the end of the engine body, a handy although unsightly Bing locomotive feature. In appearance the shorter No. 3238 engine was a little better proportioned and seemed to have more graceful lines than the somewhat longer and taller No. 3238 model, which perhaps might have made a much better twelve wheel model, with its long over extended underframe. The cast underframe of the small No. 3238 engine seemed to have more detail and was expertly designed. In contrast the larger locomotive had hardly any underframe work in detail. Its apparent high center of gravity resulted in a weak stilt-like appearance enhanced by the stretched out underframe lacking bulk and strength. The section of the frame just back of the wheels on each side was virtually a weak spot in the casting as most of the breakage would occur in this thinned out area.

Each of the Bing engines had little differences in body detail, some quite obvious, other required more than a casual look. The shorter No. 3238 engine had five steps leading to the engine cab, while the Longer No. 3238 model had four steps. On close inspection the slight difference in body rivet detail could be easily seen in each of the models.

The door detail of the engine cab was done quite expertly, with paneling and frame work in correct style all nicely proportioned in both engines, but somehow the doors at both ends of the engine were left in a very poor state of completion, almost entirely devoid of any detail. None of the models had any handrails much as they were desired. Very likely the absence of handrails helped to reduce manufacturing costs and the Bing people reasoned that this added detail did not merit the additional cost—at least not when the Bing locomotives had to compete inexpensively with American made engines.

The Bing electric locomotives were usually finished in a dark grey color with a bright orange-red trim found on the square window and door frames also along the open ventilators on the engine sides. The engine underframe was finished in black baked enamel or Japan color. The soft pot metal spoke type engine wheels had what was then considered practically the universal finish—bright scarlet red!

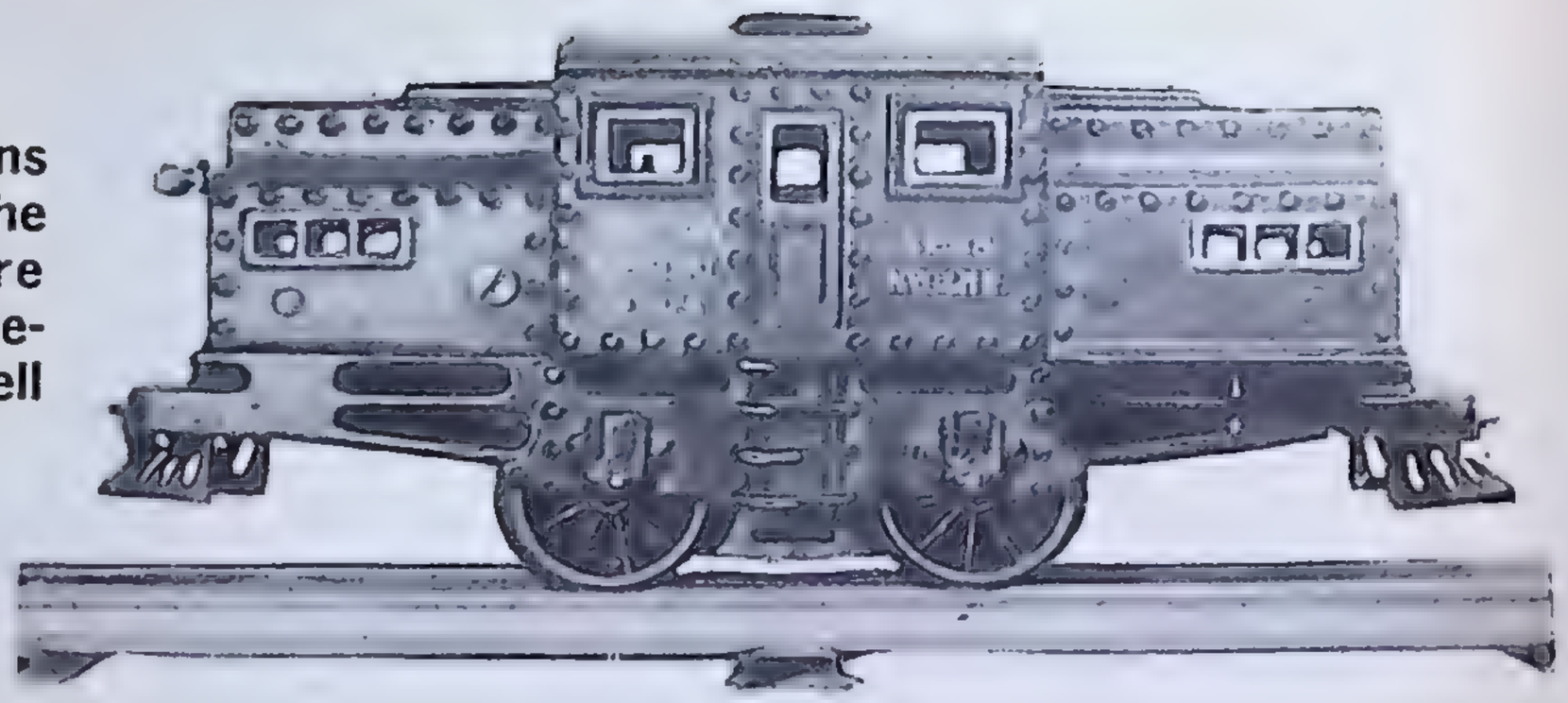
All Bing model engines and rolling stock were furnished with common hook type couplers that worked well with almost all the couplers of American manufacture. Unlike the bright silver finish couplers found on American made trains, the Bing couplers had a dull blue-black steel finish.

"New York Central Lines," along with "No. 3238 N.Y.C. & H.R." was rubber stamped with white opaque ink on the engine cab sides—all very similar to Ives lettering. The firm name never appeared on any of the electric type engines, although the steam types did display the Bing name, usually just underneath the engine cab windows. Occasionally in the electric type, the word "GERMANY" would appear rubber stamped in very small letters at the end of the body slightly above and to the right of the rear door. The Bing body castings in thickness and weight compared favorably with those made by Ives, with perhaps Ives being just slightly thicker and heavier. The Bing motor unit showed a good deal of difference when compared with that of Ives, with the Bing wiring being more delicate and finer. The field was made up of six laminated steelplates somewhat smaller and lighter in weight than those found in American motor units. The motor frame was fashioned from four steel sections free from bulk and dead weight. The diameter of the engine wheel axles was smaller than that found in any American manufactured toy locomotive. Inside third rail collectors were the brass roller type, efficient but with poor wearing qualities. The Bing copper strip brushes were yet to be improved upon at this time—delicate and flimsy they often proved troublesome and needed adjustment.

The Bing eight wheel passenger cars followed pretty much the pattern set up by the Ives Corporation of Bridgeport, Conn. With painstaking care each car left the German tinplate factory measuring a sharp 6-1/2" long, 2" wide and 3-1/2" tall. The single piece car roof was formed from a rectangular metal sheet crimped and formed to fashion a proper arched roof. Further roof detail consisted of four mushroom top ventilators which were made possible by means of the embossing process, so skillfully used by the Bing Company. The doors and window frames on the car sides were embossed to give depth and realism to what would otherwise be a flat and uninteresting car side. On each of the car ends the doors were left open as archways. The car body was formed from two "L" shaped sheets of metal held together with metal fingers and slots. There were twelve finger slots that held the car sides to the floor or frame piece. The ends of the car sides were fastened together likewise by this same finger slot arrangement. The car sides were reinforced on the inside.

9 - BING OF THE TWENTIES

German made Bing trains were highly popular in the United States and were unique in many ways. Sometimes they're hard to tell from Ives.



DURING the war torn years of 1914-1918 in Germany, the toy industry along with other non-essential enterprises suffered a virtual collapse.

The Bing firm, one of the oldest of German toy train manufacturers practically converted to war work and slowed down its production of scarce metal toys until the peace of 1918. After that time Bing turned back to the full scale mass production of an astounding variety of tinplate trains that left a trail of "OO" gauge track in almost every country in Europe, Great Britain and the United States. At that time the popular double O gauge measured by European rule as 1-1/8" between the rails or just short of the American O' gauge width.

The post war years began with an increasing popularity of the electric outline engine. The interesting steam type locomotive with its wealth of detail and action packed mechanism began to give way to the sleek silent electric type with business like cowcatchers on both ends. The Bing plant lost no time in turning out a line of O gauge engines that were perhaps the closest copies of the then popular iron clad Ives electric types ever made. Of all the American manufacturers, tne Bing firm singled out the old established Ives Corporation and patterned its line to resemble the electric engines that rolled out of the Ives Shops in Bridgeport, Conn.

Due to wise management in those important post war years, Bing thoughtfully continued to produce European types of engines and rolling stock which it shipped to England, France, Spain, Portugal and other continental countries—while still exporting American type equipment to the large prosperous toy electric minded market across the Atlantic to virtually the Eastern half of the United States.

Top: The German firm of Bing turned out a wide variety of American styled O gauge locomotives and cars, many of them amazingly similar to items made by Ives, down to the number 3238.

Below: Small cab 3238 also in cast iron with New York Central Lines Lettering. Bing also made extensive European line of trains.

It was rather commendable that the huge ambitious firm producing such a wide variety of mechanical, electric and steam operated toys could keep up with design changes and the whims of the inventive American competitors. At one time the German firm undertook to manufacture toy steel construction sets similar to those made by Ives prior to the war. Unfortunately the Bing mechanical sets, although they were extremely well made, never achieved a ready market in this toy conscious country of ours, and few were ever imported. The disappointing number of such sets that were brought to America found their way to a handful of the better class toy shops in the East and soon faded from the American toy scene forever. These construction sets are worth mentioning because they made a nice complement to the interesting Bing line of fine quality trains and chosen accessories.

In European countries the Bing trains were known as the "OO" gauge which measured 1-1/8" between the rails—a common standard in that part of the world, and of course very popular. The immense popularity of Bing trains could hardly be exaggerated when the firm printed and distributed tinplate catalogs that ran into several hundred pages packed with thousands of illustrations.

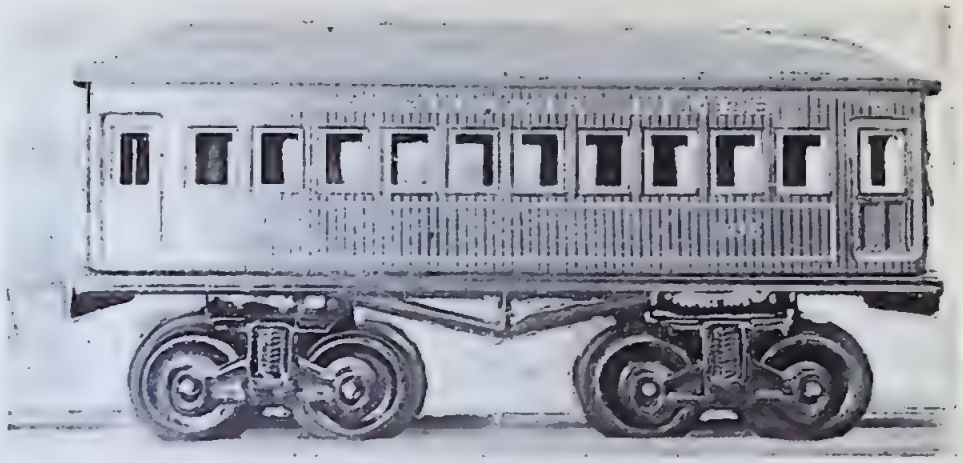
Almost anyone who could peek into the business ledgers of the Bing firm could easily guess that United States and England were some of the biggest importers of the Bing line of trains, so quite naturally these countries were especially catered to in rounding out THE BING LINE of trains and accessories. Every detail with this in mind was attended to in the most expedient manner. For example, when the post war prohibition of alcoholic liquors was enforced in this country, and when such words as "beer" became offensive, the Bing firm neatly blocked out the offending word on its lithographed American beer refrigerator cars. Such example of public relation work won over skeptical buyers of foreign made toy trains. In its day, the Bing trade mark and good will figured well into the hundred thousand mark.

Though there were many sales outlets in America for Bing trains and mechanical toys, perhaps one of the biggest single sources of supply was the parcel post packing mail order houses that loomed out of the expansive midwest region. Next in line as sales outlets were the department stores throughout the country, with the Eastern stores as the leaders.

As a rule, the stores handled the finest selection of imported Bing trains just about Christmas time, along with the rest of the various holiday goods.

The Bing four wheeled cast iron electric type locomotives, were, with slight changes, almost duplicates of the Ives electric engine made in O gauge. Somehow the Ger-

Bing passenger cars were made from two sheets of tinplate metal, lithographed, punched, and shaped into an "el". Litho graphy was clean, with a complete line of American road names.



man toy maker seemed to be charmed with the number 3238 and assigned this number to practically all of the Bing O gauge electric engines regardless of size, weight or power. In reality, Ives did have a current locomotive bearing this exact number in its O gauge line, but it was only one of the various numbered Ives engines made at that time. There were two popular Bing electric types that headed the list of American best sellers; a short stubby type and a long body slender type. The bodies of each of these 0-4-0 engines were made of fine detailed foundry cast iron, two piece castings similar to the Ives bodies. Unlike Ives, Bing made separate cast iron pilots which were attached to the iron underframe casting by two machine screws. In the event of a broken pilot, the matter of replacement proved no problem, whereas in the case of the Ives engine, the entire cast underframe had to be replaced.

The iron rivet detail on the Bing engines was large to the point of being oversized. Each model had a raised roof ventilator but actually without any opening. Very obvious polished brass manual reverse control knobs stuck out of the end of the engine body, a handy although unsightly Bing locomotive feature. In appearance the shorter No. 3238 engine was a little better proportioned and seemed to have more graceful lines than the somewhat longer and taller No. 3238 model, which perhaps might have made a much better twelve wheel model, with its long over extended underframe. The cast underframe of the small No. 3238 engine seemed to have more detail and was expertly designed. In contrast the larger locomotive had hardly any underframe work in detail. Its apparent high center of gravity resulted in a weak stilt-like appearance enhanced by the stretched out underframe lacking bulk and strength. The section of the frame just back of the wheels on each side was virtually a weak spot in the casting as most of the breakage would occur in this thinned out area.

Each of the Bing engines had little differences in body detail, some quite obvious, other required more than a casual look. The shorter No. 3238 engine had five steps leading to the engine cab, while the Longer No. 3238 model had four steps. On close inspection the slight difference in body rivet detail could be easily seen in each of the models.

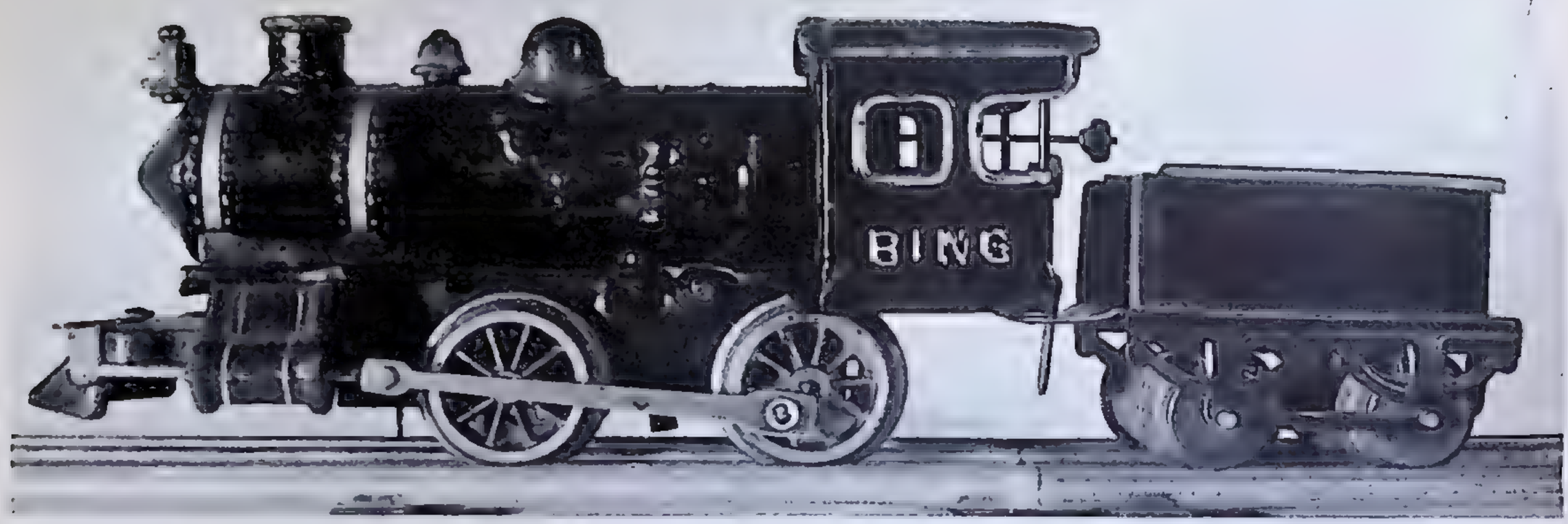
The door detail of the engine cab was done quite expertly, with paneling and frame work in correct style all nicely proportioned in both engines, but somehow the doors at both ends of the engine were left in a very poor state of completion, almost entirely devoid of any detail. None of the models had any handrails much as they were desired. Very likely the absence of handrails helped to reduce manufacturing costs and the Bing people reasoned that this added detail did not merit the additional cost—at least not when the Bing locomotives had to compete inexpensively with American made engines.

The Bing electric locomotives were usually finished in a dark grey color with a bright orange-red trim found on the square window and door frames also along the open ventilators on the engine sides. The engine underframe was finished in black baked enamel or Japan color. The soft pot metal spoke type engine wheels had what was then considered practically the universal finish—bright scarlet red!

All Bing model engines and rolling stock were furnished with common hook type couplers that worked well with almost all the couplers of American manufacture. Unlike the bright silver finish couplers found on American made trains, the Bing couplers had a dull blue-black steel finish.

"New York Central Lines," along with "No. 3238 N.Y.C. & H.R." was rubber stamped with white opaque ink on the engine cab sides—all very similar to Ives lettering. The firm name never appeared on any of the electric type engines, although the steam types did display the Bing name, usually just underneath the engine cab windows. Occasionally in the electric type, the word "GERMANY" would appear rubber stamped in very small letters at the end of the body slightly above and to the right of the rear door. The Bing body castings in thickness and weight compared favorably with those made by Ives, with perhaps Ives being just slightly thicker and heavier. The Bing motor unit showed a good deal of difference when compared with that of Ives, with the Bing wiring being more delicate and finer. The field was made up of six laminated steelplates somewhat smaller and lighter in weight than those found in American motor units. The motor frame was fashioned from four steel sections free from bulk and dead weight. The diameter of the engine wheel axles was smaller than that found in any American manufactured toy locomotive. Inside third rail collectors were the brass roller type, efficient but with poor wearing qualities. The Bing copper strip brushes were yet to be improved upon at this time—delicate and flimsy they often proved troublesome and needed adjustment.

The Bing eight wheel passenger cars followed pretty much the pattern set up by the Ives Corporation of Bridgeport, Conn. With painstaking care each car left the German tinplate factory measuring a sharp 6-1/2" long, 2" wide and 3-1/2" tall. The single piece car roof was formed from a rectangular metal sheet crimped and formed to fashion a proper arched roof. Further roof detail consisted of four mushroom top ventilators which were made possible by means of the embossing process, so skillfully used by the Bing Company. The doors and window frames on the car sides were embossed to give depth and realism to what would otherwise be a flat and uninteresting car side. On each of the car ends the doors were left open as archways. The car body was formed from two "L" shaped sheets of metal held together with metal fingers and slots. There were twelve finger slots that held the car sides to the floor or frame piece. The ends of the car sides were fastened together likewise by this same finger slot arrangement. The car sides were reinforced on the inside.



10 - BING CLOCKWORK

Bing clockwork trains were high in quality; had machined parts that contributed to smooth running characteristics.

BING MINIATURE RAILROAD SYSTEM.

General Instructions

for

Mechanical train sets.

It is absolutely essential, that these instructions be studied carefully before attempting to start your miniature train. While all our toys are fully guaranteed against defects in construction, we cannot be held responsible for injury done through unfamiliarity with these instructions. Therefore read them over very carefully.

The Track.

In laying the tracks be sure that they are joined with out forcing or bending; that they are laid on an absolutely flat surface, and that they are kept free from dust and dirt. Begin to lay all tracks from the right, inserting the little pins at the end of each section so that they will easily and with out forcing fit into the connecting section. It is important, that you do not use force in connecting the various sections of the track.

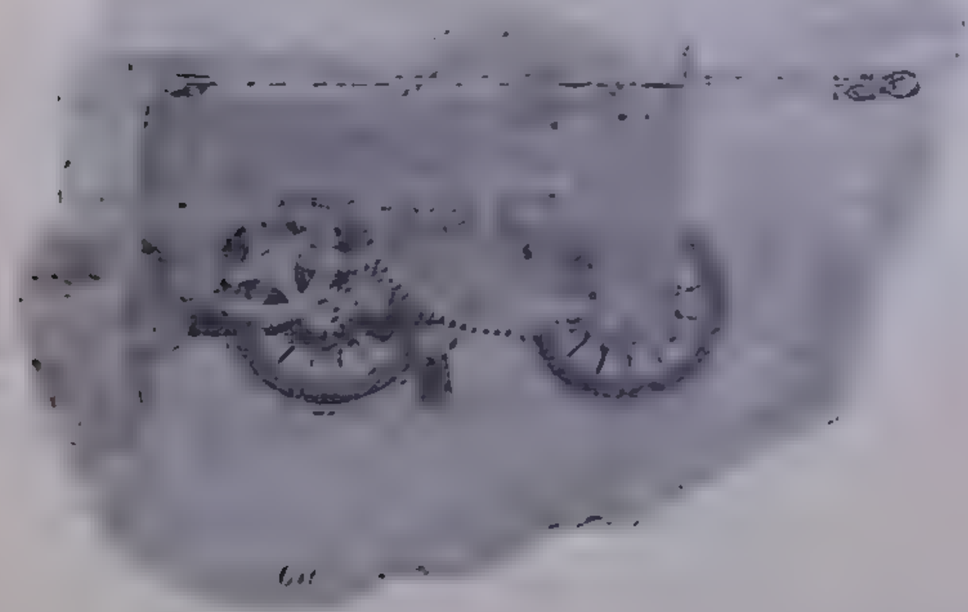
Locomotives and Clockwork.

1. Oil all parts liable to friction, like piston rods, axles of the wheels etc., using pure sewing machine oil.
2. Before winding up, stop the mechanism by putting on the brake. Wind up the clockwork by turning the key from left to right, that is, in the direction of the hands of the clock. On no account should the key be turned in the opposite direction.
3. To avoid damage to the spring, do not put away the engine with the spring wound up.

Tender and Carriages.

1. All axles, wheels and bearings are to be oiled well. The wheels should spin freely and should not touch anything. Be careful not to oil the tyres of the wheels, that is, the running surfaces.
2. Carriages with bogie wheels should be seen to so that the bogies turn easily and the latter should be oiled wherever friction occurs.
3. The couplings of tenders and carriages must be able to move easily and care must be taken not to bend them.
4. When using the trains for the first time it is advisable to distribute a drop of pure sewing machine oil over the running surface of the whole rail formation. After the train has been used a number of times: it will be found that it runs much easier, and that it will even be possible, to add a few more carriages.

Protect the locos against sudden changes in temperature, otherwise, the spring is liable to break.



An early Bing instruction sheet for clockwork locomotives.

AN ODD 40 years ago, at traditional Christmas time, many a father carried home boxes of mechanical toy train sets that blazoned the word "Bing" across the colorful roaring express train pictured on the box label. Today, after scores of years, the name "Bing" has, like the pictured express train on the box label, roared away into the dim past, leaving a swirly dusty cloud of memories that have slowly settled among tinplate collectors shelves.

The early Bing Manufacturing Co., a stalwart German enterprise, had one chief interest and that was the fabrication of mechanical toys. Although the firm made a large variety of toys, they are perhaps noted most for their extremely fine mechanical toy trains and railroad accessories. Very few of the competing foreign toy trains ever shared the glorious popularity of the miniature Bing trains in toy conscious America. Year after year, large department stores across the nation displayed the bright, varnish-like finishes of new Bing toy train models every Christmas season, with an eye popping grandeur that gave the American manufacturers quite an alarm. Giant mail-order firms helped in no small way to spread the expansion of Bing toy train sales to rural communities.

Curiously, this Bing toy train popularity was indeed well deserved because of the fine quality merchandise that went into every German packed train set or accessory. From the small inexpensive O gauge clockwork sets to the large deluxe No. 1's, each part or piece was carefully formed, machined, or processed. Wheels, stampings, lithography—everything was carefully done for the Bing people had big plans in store for continued expansion of the U.S. market and fine quality was of prime importance.

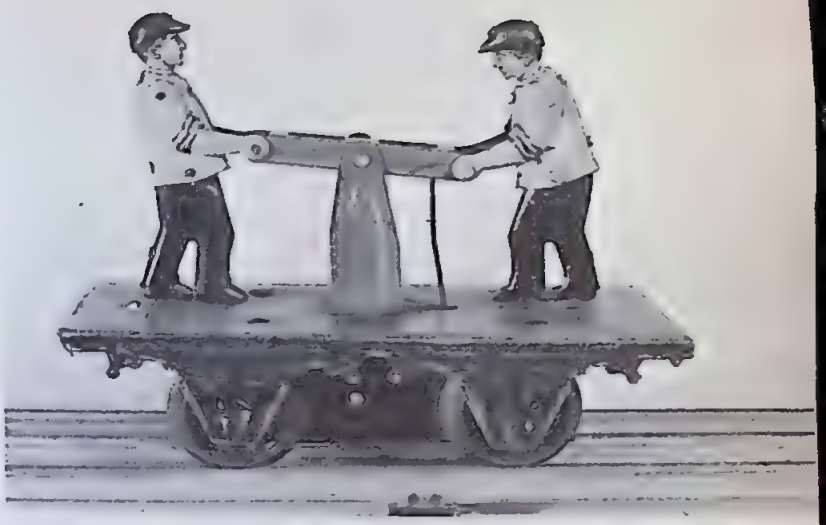
Thoughtful Bing was seldom the pioneer, but left the design of locomotives and cars, which it copied so closely, to other more enterprising American toy train manufacturers. Cautiously Bing chose to produce only those models that proved most popular in America and at a price that would make everybody happy on both sides of the Atlantic.

Although Bing first made clockwork locomotives in both O and No. 1 gauge, it soon followed the American toy train manufacturers, trailing especially close behind Ives, and proceeded to make and export electric trains.

The electric locomotives were made in both steam and electric body types patterned not after the European but rather the American versions. The clockwork locomotives were all steam types and were mostly limited to small 0-4-0's, although several nicely designed 4-4-0 types were also marketed in somewhat limited quantities.

Essentially, the clockwork engines were made up largely of cast iron bodies with the spring motor mechanism as a separate part—very similar to the Ives or AF units. Unquestionably, the iron castings were extremely well made with sharp detail and were relatively free from casting

LEFT: Bing O gauge clockwork 0-4-0 has cast boiler with raised Bing lettering on cab. Clockwork motor was of good quality, long running. Tender is stamped steel construction. RIGHT: Bing O gauge handcar in which workmen appear to pump handles as car operates. Handcar is all litho. No. 528 Caboose is tuscan red litho with black frame. Penna. Coal & Coke Co. car is grey litho. The two freight cars go with loco on opposite page. Double truck New York Central 20th Century observation car at bottom is by Bing; is very similar to Ives equipment in size and manufacture. All Bing items shown from Carstens collection.



defects such as pitted or notched surfaces. The German firm's foundry methods were well advanced.

In size and weight, the Bing locomotive was interesting when compared with American Flyer and Ives locomotives of the period. Bing locomotives appeared to be just a little less bulky because of the slighter, somewhat thinner, iron castings. Neither the Ives nor the AF engine had as many machined parts, which perhaps helped to account for the smooth operation of these early Bing engines.

Practically all the Bing models were equipped with a brake lever that extended from the engine cab. Other more elaborate and expensive models had a reverse lever in addition. The Bing levers were just a bit fancy when compared with the simple types made by Ives or AF. Usually a screw type knob of some sort distinguished the Bing.

One unmistakable feature that caught one's eye was the white metal cast alloy headlight which was found attached to the Bing cast iron locomotive boiler front. For some reason, the headlight was never cast in iron as a part of the superstructure as were the headlights in the American models. In the nimble hands of curious children, the soft alloy headlight was soon neatly separated from the boiler casting leaving a small iron shelf with a hole in it.

The little 5-1/2" Bing four wheel cars were practically the same size and proportion as those cars made by Ives or American Flyer. Since these cars were made of light gauge lithographed metal, a Bing clockwork locomotive could easily haul more than just the two or three cars which were usually included in the set. The cars were almost always lithographed in at least four or more colors expertly blended to give a very pleasing prototype effect. The construction of these Bing four wheel cars was very much like those of early Ives cars of this same period. A very striking detail was the embossed trucks of these Bing four wheelers and tenders. So much detail appeared in the embossing that it was unmistakably a Bing trade mark. Strangely, only the four wheeled cars had this highly detailed embossing. The eight wheel Bing cars had plain trucks.

The formed sheet metal disc wheels seemed to have been better formed than those of Ives cars, and were practically always finished in black or dark brown—never in the bright silver finish which was common among the American tinplate cars of the era. Perhaps Bing thought this was a bit of realism that would add to the attraction and harmony of the finished car. Thoughtfully Bing made the car couplers of the same height and style so that they could be interchanged with American cars. The tremendous amount of lithographed detail that Bing incorporated per square inch surface in their cars was truly amazing. Except for the very tiny lettering (Bing Miniature Railroad System) on the ends of the cars, the word "Bing" never appeared on the car sides. Usually the passenger cars were lettered after either the New York Central or Pennsylvania RR.

Bing was very fond of its trade mark which was usually securely embossed on the underside or bottom of the car, not lithographed nor rubber stamped.

Although Bing was definitely a foreign product, the great role it has shared in the history of early toy trains can hardly be overestimat

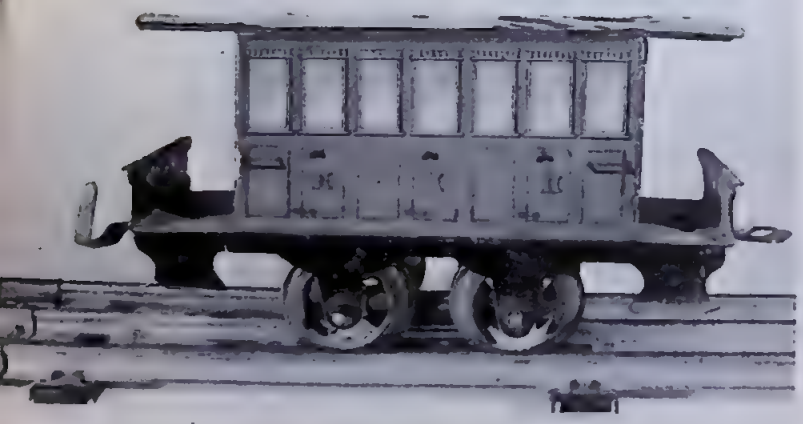
11 - EARLY GERMAN CLOCKWORK

Pre-World War I O gauge trains from Germany were invariably of stamped tin, sold for $1.

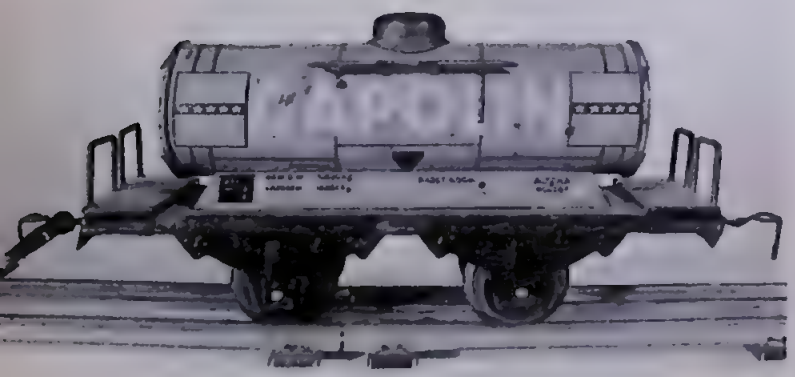
Carrette 4-wheel trolley is lesser known German train firm. Gears on wheels prevent operation on most standard track.

IN THE meager tinplate years somewhere between 1900 and 1914, when the first rumble of guns in Europe began a great World War that froze all foreign trade, small, inexpensive simple-designed foreign O gauge toy clockwork train sets began a constant dribble into the U.S.A. What at first seemed like an insignificant importation soon began to grow into flood-like proportions.

These early train sets were practically free from any competition for at least a few of their first years after being introduced to hungry toy buying Americans. The great majority of these "less than a dollar" clockwork sets were of German manufacture. While other foreign countries did export similar toy trains, the German manufacturers seemed to be the unchallengable leaders in this overseas toy crusade which eventually aroused the American toy industry to originate "Buy American Made Toys" and similar phrases.



Tiny Issamayer 4-wheel litho coach matches loco upper right. Piece is old, dating about 1895; was found in original box with track in Vermont antique shop at base of Mount Equinox.



Scarce O gauge Kraus-Fandor O gauge litho tank car from Germany. Later, in USA, Fandor people became Dorfan.

The large exclusive American mail order houses were one of the best and greatest sources of distribution since their sales were spread across the wide nation. Being light in weight, the shipping and packing costs of these German train sets had a decided advantage over other heavier constructed toy train sets, an important factor which perhaps may have influenced the sales stimulus effort shown by the mail order houses.

Surprisingly, these sets were practically 90% "tinplate" trains in the strictest sense of the word! Except for such items as gears, engine wheels, axles and steel spring, the entire train set from coupler to coupler and from smoke stack to steam chests, was constructed entirely of tinplate. These sets were perhaps the earliest that approached the ideal tinplate form in the matter of design and construction. Essentially, they embodied as much detail as was made possible by lithographic and embossing processes, which incidentally were basically European inventions and had achieved technical progress among European manufacturers before they were introduced into this country.

In general, the small 0-4-0 steam type locomotives were constructed of light weight tinplate, properly formed embossed and lithographed. It is interesting to note that the same light weight tinplate material was used in the construction of both the passenger car and locomotive bodies. The entire construction of both locomotive and cars was practically accomplished without the use of solder. Formed metal tinplate parts were joined by tiny projecting metal fingers fitting into tiny slots cut into the metal and lapped over securely.

The boiler, front end plate and superstructure such as smokestack, sand dome, etc., were separate pieces all assembled without the use of solder. The engine cab and steam chests were also fashioned after a similar manner. A unique feature was the somewhat long shaped removable cowcatcher. The manufacturer left nothing to imagination. In European markets, the train set was sold without cowcatcher, true to European style locomotives. In America, the cowcatcher was a definite necessity and every locomotive sold was sure to have it as regular equipment. Strangely, the headlight, which was truly an American necessity, was lacking.

A light weight clockwork motor unit was confined in a rectangular metal box affair, made of somewhat slightly heavier metal than that used in the car and locomotive

1895 German Issamayer litho loco with soft wheels, clockwork. A few parts are missing but condition is otherwise quite good.

body. There was constant evidence of cheap construction and materials. Soft poured metal wheels of the six spoke type were used as drivers. A minimum amount of brass and iron were used in the spring motor unit. Stamped, one piece, simple acting drive rods were made of steel with a dull silver finish. A permanently fixed or attached small steel windup key activated the clockwork mechanism that soon spent itself economically after the locomotive and cars completed several laps over the circle of track.

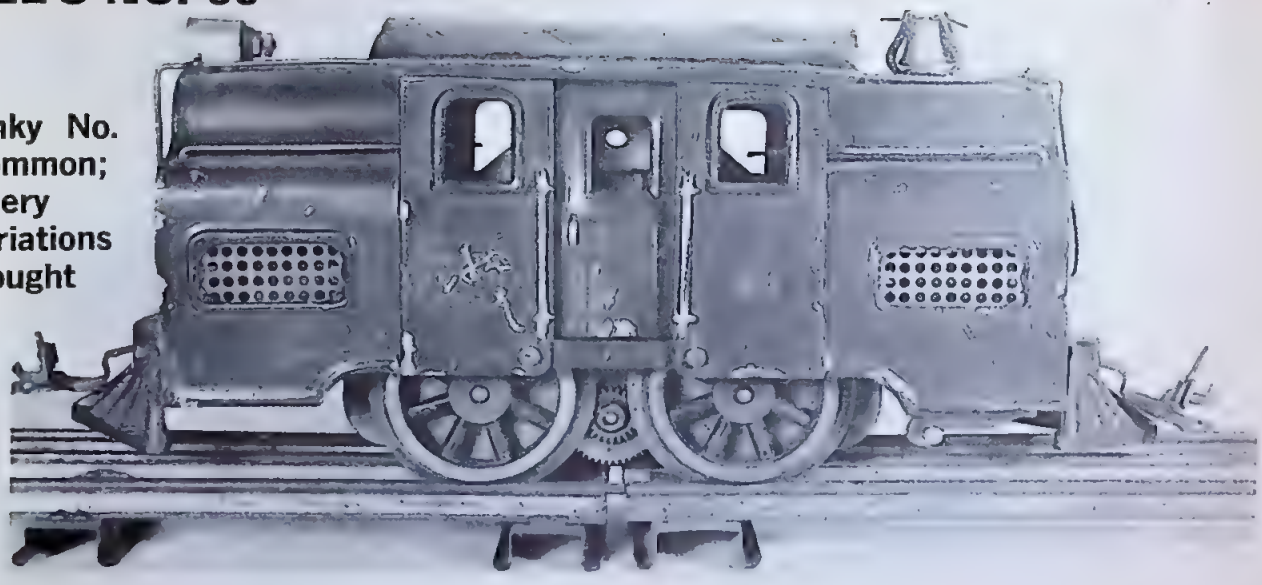
Trackage was of very light construction and poorly reinforced. Unless handled with care, the track was easily bent out of shape. These inexpensive models of course had no start and stop levers—no reverse mechanism, nor were they burdened with reverse track gadgets of any kind. The engine cab offered a fair amount of detail made possible by the embossing process. This was very evident by the appearance of window frames, roof edging and roof ventilators. The front boiler plate, being in a prominent position, was exceptionally well formed. For some unexplainable reason, the engine coupler, a steel rod, appeared almost twice the necessary length. The light weight German locomotive tipped the scale at less than half a pound. In length, it was perhaps the shortest of any 0-4-0 steam type clockwork model made in that period, although the sharp angled cowcatcher did give the locomotive an overall length that actually placed it in a class by itself. Since it was light in weight, its traction power was limited to a tender and two cars. Because of its light construction and lack of solder joints, the train was very fragile indeed—so fragile that any part of the locomotive, except the wheels and spring motor mechanism, could easily be bent out of shape with finger pressure. Durability was one thing that these sets lacked.

The tin disc wheels of the passenger cars were unlike any that were made by the American manufacturers. These German manufactured wheels actually had spoke wheel detail embossed into the outer wheel facing (each wheel was formed from two tin plates). The close fitting nail wire axles gave the finished wheels an almost perfect free spinning movement with a minimum of friction.

This handsome No. 1 gauge combine in maroon litho is by Bing, very similar to another car in Carstens collection by Marklin.

12 - LIONEL'S NO. 33

Lionel's chunky No. 33 is still common; belongs in every collection. Variations are eagerly sought by collectors.



BACK in 1916 if you were a boy who was lucky enough to live in a fairly large home equipped with electricity and had parents who were progressive with above average income, you might have experienced the good fortune of being the proud owner of the one and only electric toy train set of the big size. Very likely you were the only boy on the block of your street to own "a real big electric train set." These big or standard gauge sets were made exclusively by Lionel at that time since the wide gauge trains of other various manufacturers such as American Flyer, Ives, and Dorfan were still in the future. From a historical standpoint, the Lionel Corporation actually started the manufacture of wide or big size electric trains and trolley cars in 1900. The first locomotives of these formative years were made with a good deal of hand labor. They were rather heavy and bulky in appearance. Gradually through the passing years with frequent design changes and engineering improvements, the Lionel standard gauge electric engines evolved into locomotives that were lighter in weight, more realistic in appearance, and excellent in operation.

In 1916 one of the better known Lionel locomotives that rolled across wide gauge tracks on soft parlor carpets, was listed as the No. 33 electric type 0-4-0. This engine with clean simple lines was not only the big bargain of the wide gauge electrics, but it was also the most popular as to size and price judging by the sales records during the annual Christmas toy selling season. Oftentimes many dealers were sold out of this fascinating and popular model long before the end of the holiday season.

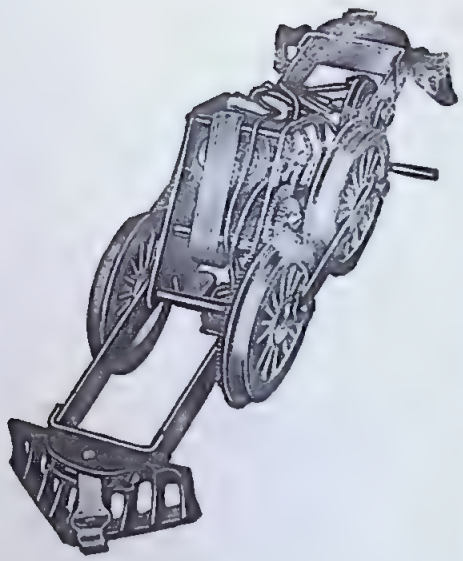
It was a real thrilling boyhood experience to lay your nimble hands on the heavy slate top covered Lionel transformer and slowly slide the knobbed control lever from low to high voltages and watch the purring steel giant move swiftly across the track sections with a measured clickety clack sound followed by the roar of the trailing cars. The unmistakable blue electric flashes that appeared underneath the moving engine were almost always followed by tiny gold-yellow sparks, that brought a gleam of boyish delight. The vibration of the electric motor could be felt in every part of the locomotive, from the handrails to the bell and from the side ventilator to the tip of the coupler.

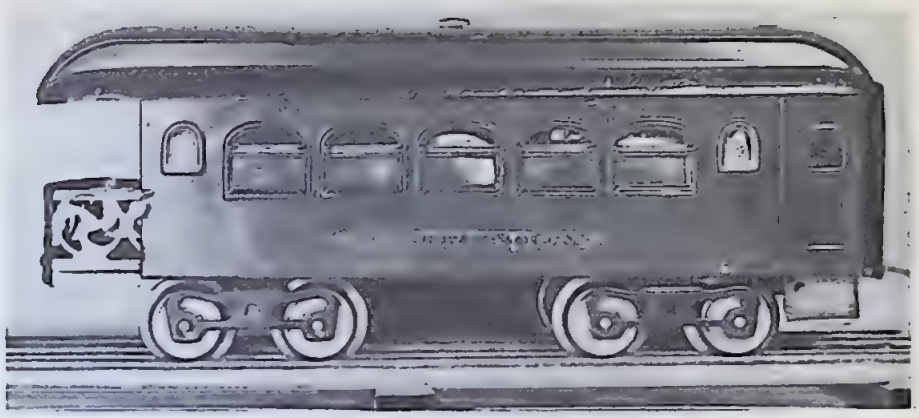
With the continuous acceptance of its products, the company grew and by 1916 the Lionel Corporation destined to become one of the biggest electric toy train manufacturers in the world, managed to mass produce almost a half million trains and trolley cars. The greater part of the factory schedule called for locomotives and railroad cars rather than trolley and interurban cars which were made in much smaller numbers.

The size of the No. 33 locomotive measuring 11x3x4-1/2 inches provided a good handful for the miniature railroad engineer. The four geared drive wheels 1-3/4" diameter were of a simple design with a large hub and eight spokes. Except for the earlier models these engines had red colored die cast wheels, nickled steel rims and bright polished hubs. For many years the No. 33 engine was to be the only model that was equipped with die cast wheels as all the other models had machined one piece cast iron drivers that would last the life of the locomotive. Prior to 1916 the engine had no reverse controller and ran only in a forward direction. Later Lionel decided that this was a handicap as it was the only engine in the standard gauge line that could not be reversed. A reverse controller was added and the firm was able to boast that all of their standard gauge engines could be run forward or backward and be used for switching purposes. At this date and prior to the system of individual car illumination, Lionel equipped the No. 33 engine with a connecting binding post for the interior illumination of passenger cars. This small nut and bolt type binding post was located on the rear part of the engine, next to the bell. Made of brass and nickelplated, the post blended as a part of the engine superstructural detail. Although the binding posts were regular equipment, the patented car illuminating outfits were extra purchase items.

From its earliest years Lionel boasted that its electric trains could be operated on any type house current with a Multivolt transformer or a Lionel Direct Current Reducer for direct current; or from dry cell batteries or a storage battery. The Lionel Multivolt transformer was an efficient instrument that lasted almost indefinitely when properly used. While its initial cost was high, it represented a considerable saving over a period of time when it was used in place of expendable dry cells. Every purchaser who acquired a Lionel train set bought the transformer, providing of course, that his home had electricity. The firm catalogue advertised the transformer as "a big saver of money and batteries."

Most of Lionel's early customers were obtained through the medium of the firm's sales literature. Prospects were told how much superior the trains were to other competitive trains. Anyone who read the catalogue learned that the Lionel engine bodies were made of sheet steel and not cast iron. In fact the only cast iron that was used in the construction of the No. 33 engine was that found in the cowcatchers. To the eye it appeared that about 4/5 of the No. 33 locomotive consisted of a steel sheet body with about 1/5 devoted to the supporting wheels. At every oppor-





Lionel No. 33 is among the more common Lionel Standard Gauge locos, an ideal low cost starter locomotive for the new collector. Chassis is shown above. Common cars are the No. 35 Pullman and No. 36 Observation. Somewhat rarer is No. 32 Baggage.

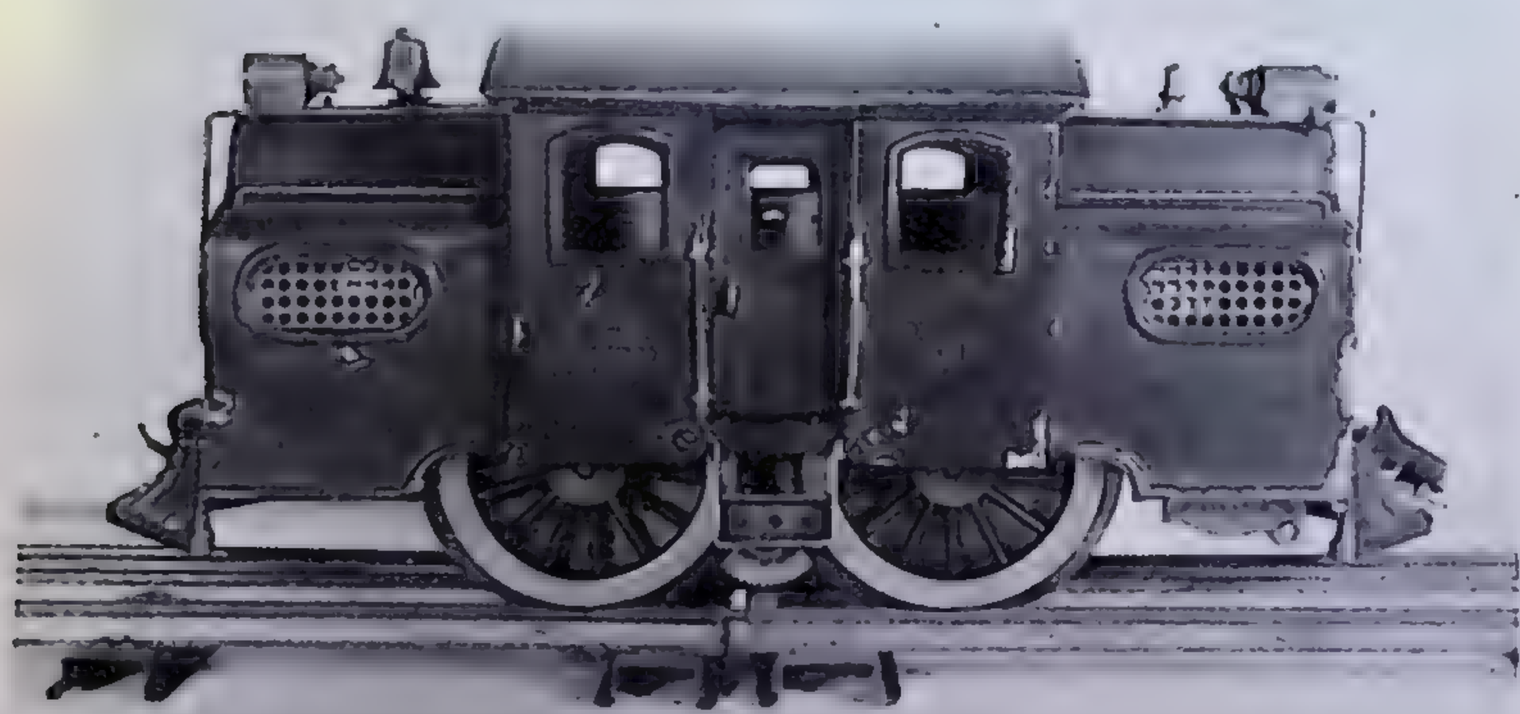
tunity Lionel made sure that the buying public would get to see what laid underneath that so called "unbreakable" steel body. Catalogue issue after catalogue issue had at least one large illustration showing the engine and chassis with the body removed. These illustrations were always carefully made to show every part and fitting that made up the electric toy. In the early catalogues the chassis of the No. 6 engine was used as an illustration, while in the later catalogues of the 1920's, a chassis of a No. 38 was used as an example.

The fast acting No. 33 locomotive could pull a load of two or three passenger cars around an oval of 110 lb. Lionel track at somewhat of a high rate of speed for a miniature electric engine. (The name "110 lb. track" came from the fact that the track withstood a pull of 110 lbs. when subjected to a laboratory test.) With its strong light weight sheet steel body mounted on a heavy motor unit and wheels, the locomotive stuck to the rails rounding the curves without derailing. Patterned after the more popular electric engines of the New York Central, Pennsylvania, and New Haven railroads, the No. 33 Lionel closely followed the intricate outlines of these Eastern prototype engines. The finish of these No. 33 engines was interesting in that it followed the colors of the big engines—olive green, black, wine color, and grey. Lettering was the opaque gold ink type used in conjunction with a rubber stamp. The cowcatchers and wheels of the engine were finished in a red color, while gold paint was used on the side ventilators, as well as on the handrails. The bell, headlight, and couplers were always the brightest and most glittering parts due to the nickelplating.

Although the No. 33 engine was available without a set of cars it was more commonly sold as a component of the Electric Pullman Outfit No. 34. By some strange coincidence the engine with its two passenger cars measured up a total length of 34 inches. This set contained in addition to the famous engine, a No. 35 pullman and a No. 36 observation car, eight pieces of curved track and two sections of straight track, enough to make up an oval of reasonable size measuring 3-1/2 feet wide and 4 feet 8 inches in length.

The early Lionel catalogue quoted three different prices for the same No. 34 electric train set. First there was a price for Canadian customers, then a price for those purchasing the outfit west of the Missouri River, and still another price for those purchasing the same set east of the Missouri. The Canadian price was the highest of the three, while the Eastern price was the lowest.

Like the No. 33 engine, the No. 35 series passenger cars followed a pattern of simplicity and economy. These cars, devoid of all frills and fancies of other more expensive cars, were made expressly for the low cost No. 33 engine. The No. 35 pullman and the No. 36 observation car were the smallest that were made in standard gauge. Each car measured 11 inches in length (without couplers), 5 inches in height, and 3 inches in width; approximately the dimension of the No. 33. Not only were these cars the smallest in size of all the Lionel passenger cars but they were also the only ones without the famous flexible trucks and hinged vestibule doors. Lacking the detail of other Lionel cars such as compressed air tanks and handrails, the cars were never as elaborate or as realistic as the big Lionel cars. Instead of the three piece flexible nickelplated steel trucks found on the higher priced passenger cars, the No. 35 series cars had simple one piece stamped and formed steel trucks finished in black color. The 1-1/4 inch diameter wheels were made of punched steel and were closed at the back with a heavy steel disc—actually a two piece wheel. The wheels were set on steel axles and received a nickelplate bath before being assembled. One interesting feature of the trucks was the method of mounting the axles. The axles of these particular trucks were mounted rather free riding with a slight up and down play or movement—just enough to suggest flexibility to the trucks. For many years Lionel promoted the idea of flexible trucks on all of their standard gauge cars. Protected by patents as early as 1910, the trucks were considered a company asset and good will builder. For some 15 years, almost every issue of the Lionel catalogues had at least one statement refering to the "knee action" trucks. For example, there appeared in the 1915 catalogue the following statement; "All trucks are flexible,



Early dark green No. 33 with six wheels rather than standard four is a rarity. 1915 catalog also shows a No. 34, identical, with NYNH&H lettering. No. 50, below, was last Super Motor version of Lionel No. 38, slightly larger than No. 33. Lionel standard gauge locomotives are pictured item by item in book "Lionel Standard Gauge Era."

which means that they will not jump the track while running either forward or backward. They move so easily that one of our locomotives will haul a number of them without difficulty." Flexible trucks continued in production until the late 1920's.

The passenger car bodies were constructed entirely of sheet metal and solder was used extensively in their assembly. The trucks were attached to the car floor or underbody by a machine screw. The simple hook couplers were attached by means of nailwire posts soldered to the car underbody. These posts were fitted with washers and were then crimped secure, and were thus locked to withstand a pull of several pounds. Incidentally, the No. 35 pullman car weighed 20 oz., while the No. 36 observation car weighed 21 oz.

Lettering on these cars was limited to the rubber stamped opaque ink type same as that found on the locomotives. The enameled cars were finished in similar colors to the engine; wine, black, grey, and olive green, all in uniform application. Prior to the first war, all the cars were hand painted—later mechanical methods were used more extensively in finishing both cars and locomotives. For decorative effect, each car had both plain and colored celluloid window strips to give the illusion of clear glass and stained glass car windows. These thin celluloid strips were fastened from the inside of the car and looked just like the real thing. The roof of the car was removable and was held in position by a nickeled screw that fit into a metal reinforcing bar which held the two sides of the car. This bar was located just inside the car at the roof level, and in the center of the body. For some reason the broad, flat screw suggested the appearance of a roof ventilator. The interior of the car was rather meager when compared with other big Lionel passenger cars. There were two long continuous bench type seats, one on each side of the car. Aside from the two vestibules found on the ends of the car, there was no other interior detail. Since the cars lacked hinged doors, the vestibules were most noticeable only when the roof was detached. Neither of the cars had any detailed diaphragms.

13- LIONEL ELECTRICALLY LIGHTED O GAUGE

A patented current collector made electrically lighted passenger cars a practicality in 1924 for Lionel O gauge, outmoding earlier jumper wire systems.

Across the great nation, the era of gas mantles was coming to a close. In 1924, when thousands of American homes were being electrified, the electric toy trains began a period of rattling and bursting growth. Boys and men suddenly became more conscious of the steady growth and popularity of the most fascinating toy of them all—the toy electric train. The clockwork and mechanical trains were losing the popularity race and were rapidly being overtaken in practically every household by electric trains which were no longer considered "dangerous" toys. There was something about the steady hum of the miniature motor, the monotone sound of whirling gears and the smell of ozone that captured one's attention. The flashing blue electric sparks, the glowing headlight, and the rhythmic click-click sound of the tinplate rails as the electric train sped by, intensified this appealing marvel and charmed thousands of purchasers.

American toy train manufacturers began to expand their lines and offered a greater selection of train sets, rolling stock and accessories. Intensified advertising and sales methods recruited and captured new buyers every Holiday Season. Competition among tinplate train manufacturers quickened and helped to stimulate new ideas. Thus, in 1924-25, we saw one of the leaders in the industry, Lionel, introduce electrically lighted passenger cars—cars that were illuminated independently. A patented revolving shoe built into the car truck collected current from the center rail and illuminated the car. This was really a great innovation for popular O gauge trains.

At this time, a popular typical train set of the period was Lionel's outfit No. 96 which consisted of a four wheel No. 153 hand reversible locomotive, two No. 603 illuminated eight wheel pullmans and one illuminated eight wheel observation car, No. 604, complete with a No. 88 rheostat, eight sections of curved track and two sections of straight. At $10.75, this represented a great value in the prosperous period of the mid-'20's.

The Lionel No. 153 locomotive was 7" long, 3-1/2" high and 2-1/2" wide; a manual push-pull type of reverse switch was mounted on the rear end of the locomotive near the cowcatcher. The cars measured 8-1/2" long, 3-3/8" high and 2" wide. Like other cars of their period, they had a somewhat "topheavy" appearance due to their high trucks, but operated satisfactorily. Lionel cars of this period were practically all equipped with the then new semi-automatic couplers. The engine and cars could be easily coupled automatically, providing that the couplers were straight, or in line. At this date, uncoupling still presented a problem and manual operation was necessary.

The Lionel car bodies were fashioned from a die cut single sheet steel piece—that is the floor, sides and ends were formed from a single blank die-cut stamping. With proper pressed forms, the bodies were completed and the ends of the cars were soldered. The window frames and doors were made of one steel piece fastened inside the car body—two of these were required, one on each side of the body. The observation car platform railing was stamped metal. The removable roofs were made of one piece sheet metal, stamped and formed. A single screw held the roofs to a cross piece soldered inside the car body. Lionel was the leader in this method of car construction. The cars were finished in lasting glossy baked enamel. Celluloid inserts were used in completing the windows. The trucks were formed from a one piece steel plate, diecut and embossed for detail. Nickel plated sheet metal disc wheels and steel axles completed the trucks. The bright yellow-orange body with red trim and the black trucks gave these Lionel cars a very striking appearance.

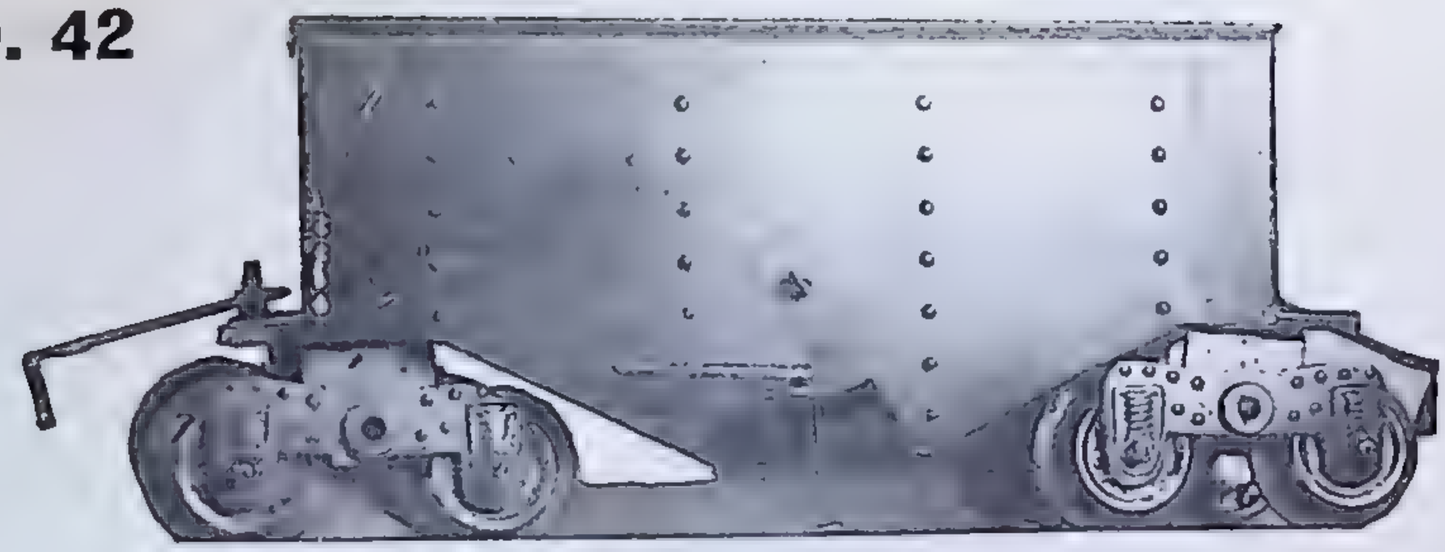
The locomotive body was formed from embossed diecut sheet metal; unlike the passenger cars, its construction was a little more complex. The cab section was made up of two embossed and punched sides; two end sections were made up in a similar manner. Solder and crimped metal "fingers" nickelplate. A nickeled metal shell or housing and a miniature lamp socket made up the headlight. The black one piece underframe was attached to the motor assembly by four screws. A screw at each end held the locomotive body firmly attached to the underframe. This simplified assembly feature was enjoyed by amateur engineers who delighted in "Adjusting" and oiling their locomotives.

The red spoke wheels of the locomotive were made of die-cast material which had reached a popularity peak. Tires of nickeled steel completed the wheels. These rim tires were pressed on the die cast wheels in the manufacturing process and helped to give the wheels longer wear.

Overall, the locomotive body was finished in green baked enamel with red trim. Lettering on the engine was accomplished by the then popular hand rubber stamped opaque ink process. The passenger cars were similarly lettered.

Because of their sturdy construction, these Lionel train sets are often still found intact after years of service, having helped bridge that great gap in toy train improvements. They still remain a never-failing source of interest to model railroad fans of all ages in spite of their crude appearance by today's modern standards.

14 - LIONEL'S BIG NO. 42



Many collectors believe the No. 42 by Lionel to be among the most beautiful engines ever built. Many survive.

IN THE early 1920's, the growing and prosperous Lionel Corporation became the unchallenged leader among the manufacturers of standard or wide gauge toy electric trains and accessories. Elbowing out in front of its competitors, Lionel had been promoting the idea of the standard gauge from its earliest sheet metal stamping years of toy train manufacturing. While various tinplate train gauges like 1-7/8 and 2" began passing into rusting obsolescence, Lionel's standard 2-1/4" gauge became the commonly accepted wide gauge train size. In time, enthusiasm for standard gauge trains reached into every corner of the miniature tinplate world. From October to December, colorful seasonal display sets and bright labeled Lionel cartons began to appear in toy and department stores that were quick to supply the demand for standard gauge trains created by Lionel's expanding merchandising methods fortified by effective advertising.

The adoption of standard gauge had been no easy task, but a slow gradual process. With a missionary like zeal, Lionel steadily promoted their wide gauge from the early days before World War I when toy electric train manufacturers were busily creating confusion in the field by producing, advertising and selling miscellaneous gauge trains.

At one time Lionel actually manufactured and cataloged more standard gauge trains and accessories than it did in the corresponding O gauge. Throughout the passing years of late 1920's to late 1930, engines and cars became heavier, bigger and more elaborate in realistic detail. Along with these years accessories showed considerable improvement in design and function. Some examples of this toy railroad progress were reflected in the operating derrick cars, the searchlight cars, automatic crossing gates, switching towers and large bridges modeled after popular prototypes of the day. When size, weight and mechanical perfection reached a practical production peak, Lionel sought additional improvement by making use of striking and vivid color combinations on its finished products.

With the advent of Lionel standard gauge track, there appeared the first real solution to the problem of interchanging widetrack with other popular makes, such as Ives, American Flyer and Dorfan. The 2-1/4 gauge was adapted by all four makers.

In a sense, the individual semi-automatic couplers of these manufacturers deliberately afforded a stumbling block to a complete interchange of the various makes of locomotives and cars. Thoughtfully, each manufacturer had special patented couplers on his engines and cars, hoping to prosper by this simple monopolistic expedient.

As was perhaps most fitting, the Lionel No. 42 twin engine locomotive became the symbol of standard gauge. Being the largest, finest and most expensive of the entire line of Lionel locos, it could well afford this great tinplate distinction in the post World War I period. The No. 42 engine appeared in practically all of the advertisements during this era—it was the attracting star of the great Lionel line. Practically every Lionel carton, whether it contained O or standard gauge items, had a colorful illustration of the famous No. 42 engine. Everyone from the planning department to the advertising manager contributed the most of their talents and skills to create a brute sort of locomotive beauty that can best be described only in terms of railroad parlance. Like most electric engines of

Above: Ballast Car No. 116, unusual in design and desirable.

Lionel No. 42 engine comes in several variations including single and double motor. For complete rundown on all Lionel Standard Gauge, refer to "The Lionel Standard Gauge Era" by Carstens.

the period it followed the design of the New York Central prototype. Being without a pantograph, both the front and rear sections of the No. 42 appeared identical except that the electric headlight was placed on the front section while the rear end section had a terminal connection for an optional interior passenger car lighting system which was used before individual car lighting was made available. Although Lionel made as many as ten different locomotive models in standard gauge during a typical season like that in 1922, it is difficult to imagine that any other model locomotive received the same expert care that was used in assembling and finishing the famous No. 42, pride of the Lionel line.

The No. 42 regular model, an 0-4-4-0 type, had twin motor trucks, each equipped with its own pick-up sliding steel shoe for center rail current. A common manual reverse switch lever activated both motors with a fair amount of synchronization. The large cast iron machined wheels were finished in bright nickelplate. Of the four drive wheels in each motor unit, only two were directly geared to the motor itself—a somewhat uneconomical arrangement by today's standards, but nevertheless, the engine boasted great pulling power and could haul a load of some twenty freight cars.

Unlike most later Lionel electric locomotives, the No. 42 had no visible underframe and the so-called one-piece all steel locomotive body fit over the two motor units like a shell. The cast iron cowcatchers were fastened with screws to the front and rear motor units—one on each end. The body was attached to the power units in a most unique fashion. A properly centered strip of steel was soldered inside the engine body just forward of the engine cab—one on each side. Each center of this soldered rectangular strip had a hole with a nut and bolt in place. Each of the motor units had an inverted "U" shaped strip of steel fastened to the motor frame ends. A properly centered hole received the nut and bolt from the steel strip which was soldered inside the locomotive body as described above and thus the engine body was attached to each of the motor units by means of a nut and bolt—one for each power unit.

The light, shell-like locomotive body proved to be a very practical asset as the weight of the engine was actually centered low in the motors and wheels, close to the track. Mechanically, the No. 42 was never known to be top heavy and it rounded the tinplate curves at fairly high speed without derailing. From cowcatcher to cowcatcher, the overall body length of the engine stretched to 15-1/2". The greatest width at the cab sides measured 4" while its roof height reached 6". The drive wheels were 2-1/2" in diameter and were attached to flexible and swivel type trucks which in motion gave the engine considerable bounce and sway.

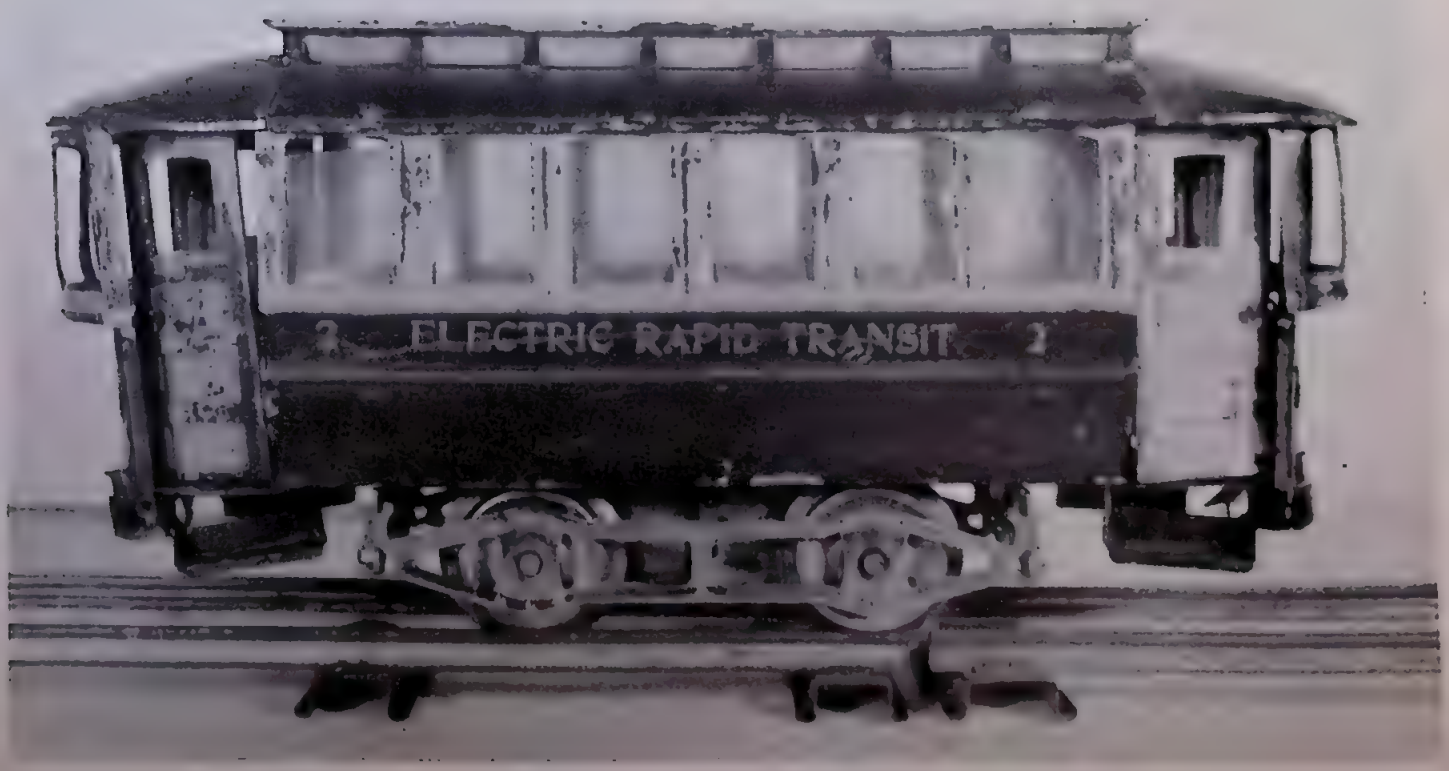
Unlike other Lionel standard gauge engines, the No. 42 was equipped with a patented "Universal Current Controller"—a device that changed the windings of the motor to either series or multiple, depending on whether direct or alternating current was used.

The usual freight cars which were sold with this early No. 42 were more practical than perfect as far as realistic detail was concerned. The No. 116 hopper or ballast car, as it was catalogued, is one good example of these early freight cars. It measured 9-1/2" long, 3" wide and 3-3/4" in height. The very simple design and construction of the car insured its success as a sturdy and useful item.

There were no fragile steps, handrails nor underframe detail to bend or break off under hard use. Realistic detail was reserved to the embossed steel trucks and the embossed rivets on the car sides. A simple operating hopper bottom completed the conservative lines of the car.

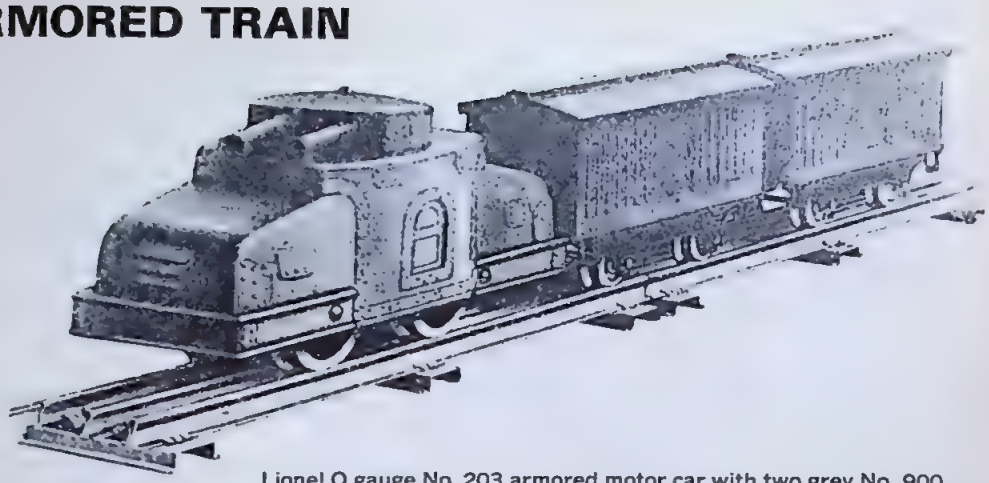
Like to all good things there had to come an end and standard gauge was dropped from all factory production and assembly about 1939. Oddly enough, Lionel was actually the first American manufacturer to make standard gauge trains and the very last one to discontinue their production.

Standard Gauge Lionel No. 2 single truck trolley.



15 - THE LIONEL ARMORED TRAIN

Lionel's No. 203 armored motor car was the first military train item made in the United States. It is sometimes found with matching grey boxcars.



Lionel O gauge No. 203 armored motor car with two grey No. 900 ammunition cars. Lionel again made military trains in early 1960 period. Marklin also occasionally made military trains.

THE YEARS 1917-18 with their mass war excitement proved to be contagious to every red blooded boy as they were to every citizen. Throughout the land a surging World War tempo was steadily increasing as American military power spanned the Atlantic to invade troubled Europe.

As our nation became involved in a war for liberty, practically every major American Industry came to play a contributing role in this patriotic cause and the voluminous toy industry, surprisingly was no exception. In the tinplate toy train field, the war role was delegated to the already famous Lionel Corp. of New York City.

It was in war rumbling 1917 when the Lionel factory, with the American flag proudly flying at mast, first produced the O gauge toy armored railway electric train set, the fascinating toy that was to capture the heart of every American boy as soon as it became available. This particular track toy was the first and only one of its kind ever made in this country at that time. Although clockwork toy armored cars and locomotives had been manufactured in Europe as early as 1900, with Germany as the leading producer, no American manufacturer of toy trains ever ventured to undertake the production of these military items.

When Lionel first introduced the armored electric train outfit, the firm thoughtfully avoided using the word "locomotive" and properly used the phrase "armored motor car" in describing the motive or power unit. The short descriptive wording "armored motor car" was in itself a powerful sales promotion factor for what boy could resist such a magnificent, up-to-the minute toy?

Since 1901, Lionel had been steadily concentrating their manufacturing efforts exclusively on wide or standard gauge trains in which the firm was an undisputed leader. The first Lionel O gauge electric locomotives and cars were put into assembly line production in 1915, thereby adding to the growing line of toy electric trains. These first electric O gauge engines were the little known No. 700 series which were incidentally the forerunners of the famous No. 150 series that were to be so popular with the young lads of the 1920's.

To the skilled workmen and craftsmen employed in the Lionel plant, the armored motor car listed as No. 203 was a special fabricated steel body mounted on the motor and wheels of a No. 700 engine—minus the underframe. Some of the later manufactured models of the armored motor car were equipped with the motor and wheels of the No. 150 series engine. It is interesting to note that the first No. 150 series were really the No. 700 engines simply renumbered—both had the same wheels, motors, bodies and finish. In succeeding years, the 150 series engines gradually underwent changes in structural detail and lost their identity with the original No. 700 line of engines. The actual No. 203 armored motor car carried no more detail than that shown in the catalog illustrations, with a compact and well designed body finished in a battleship grey color. The body of this curious electric toy was made of heavy gauge embossed sheet metal, the same as that used in the construction of the No. 700 series engines, On close inspection it was obvious that there was hardly any provision made for the proper ventilation of the electric motor. There were ventilating louvers on both ends of the body with two additional ventilators on each of the body sides, but these were far from being adequate. Heavy rivet detail appeared embossed wherever it was necessary to simulate the thick battle proof steel clad plates of the prototype war machines. Most of this rivet detail was concentrated at the seams where plates fitted tightly together. A small but realistic bulky thick steel door appeared on the sides. A huge channel, heavy steel chassis with sturdy rivet detailed corners surrounded almost the entire body, except for the center or middle section which served as the control compartment of the battle car.

The principle attraction, as might be expected, was the gun turret. This consisted of a large dome like structure situated just above the control compartment and was made to represent a solid one piece steel armored plate. Two mounted guns completed the destructive monster on rails. To accommodate a boy's keen sense of action, Lionel fashioned these gun turrets so that they could be revolved by hand. In keeping with the entire line of O gauge locomotives, Lionel designed the No. 203 motor car so that the entire armored body could be easily removed by means of four machine screws which held the shell to the motor unit via a hanger-like steel frame which was visible only from underneath. An accompanying photo of a typical motor unit shows some of the construction features of early Lionel engines. Perhaps most notable was the special brush holder and brushes which, Lionel claimed, prevented sparking. The holder was made of brass, a sort of tube with a detachable top. Self lubricating graphite brushes under spring tension insured speed and power.

The only cast iron used in the No. 203 was found in the drive wheels that were carefully machined and polished. Lack of cowcatchers on the armored car along with the absence of bell, headlight, handrails, etc. accounted for the light weight. The early model was non-reversible, running forward only with a standard load of two ammunition cars. In a special train of this type, neither speed nor pulling power were important but appearance was necessary and here the designers did an excellent job.

Armored motor car No. 203 was the only traction unit produced by Lionel in O gauge that was made without

journals; appearance-wise, this would have been an improvement. At least the element of good railroad realism would have entered into the picture more clearly.

The motor car was sold alone and in a set with two ammunition cars No. 900, a circle of curved track and a No. 88 controlling rheostat for $10.75. This same car was sold with two No. 702 supply cars, eight curved and two straight track sections plus the never-forgotten rheostat for $13.50.

As some might have been lead to believe, by their appearance the ammunition cars No. 900 were not specially designed. These cars were nothing more than regular No. 800 box cars with sliding doors finished in a battleship grey color to match the No. 203 armored car. These painted-over box cars were 6 inches long and 2 inches wide. Their 3 inch height was slightly over shadowed by the towering gun turret of the motor car, as can be seen in the photo. Wheels, couplers, and axles were left unpainted—finished in nickled steel, bright and smooth.

What Lionel listed as No. 702 supply cars were the same eight wheel mail cars listed as No. 602 in the 1917 catalog, except for the official grey color. These cars, longer and heavier than No. 900 ammunition cars, measured 7-1/2" long, 2-3/8" wide and 3-1/2" high. Every supply car had regular nickled steel wheels and axles. As in all Lionel cars made at that time, couplers were the simple, common, hook type; cars had to be actually lifted off the rails to be coupled or uncoupled. Supply cars were equipped with four sliding doors instead of the two found on ammunition cars.

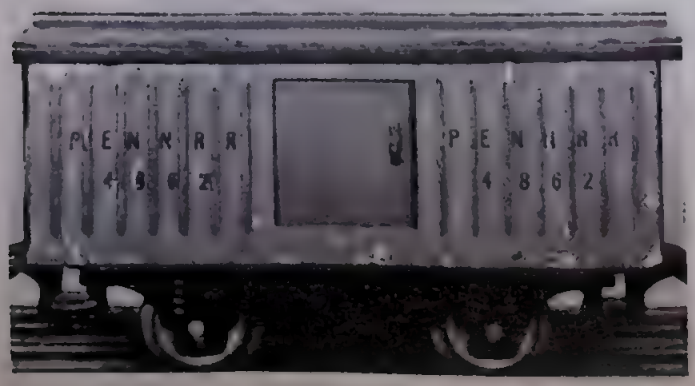
This war baby toy proved so popular that it was manufactured again in 1918 in time for the armistice and the Christmas season. In 1919 its popularity was still strong enough to warrant its continued production even into the Fall season of 1920, the start of a new Lionel era.

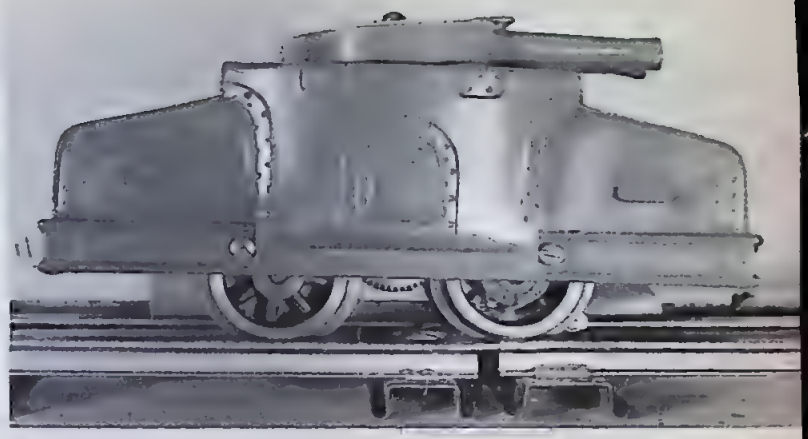
Two years after the wars end, interest in military toys began to gradually fade and Lionel decided to discontinue production of the No. 203 armored motor car unit and sets. Remaining stocks were promptly sold at a reduced price and the Lionel military train disappeared from dealers' shelves forever.

In its day, the armored motor car was so popular that most dealers were inclined to give the train special display space built around a military and patriotic background. Miniature toy soldiers, cannons, flags and other war equipment would be commonly used in these displays. Very often the train would be used in a display for Liberty Bond Drives, U.S. Army recruiting and other such related themes.

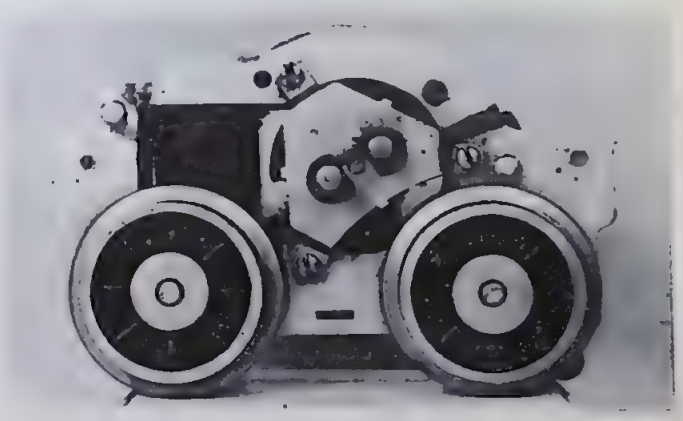
Although this unit never shared the eminent popularity associated with other Lionel items, such as the famous No. 42 twin engine, whenever it was on display or in operation there was always considerable excitement.

Battleship grey boxcar was sold with the No. 203.





Lionel No. 203 Armored Car in grey.



Motor used in No. 203 armored motor car. Unit is scarce.

Since it was in production for just a few years, it is perhaps reasonable to conclude that the train failed to achieve a much more deserving position in the toy train world of yesteryear. The fact that the armored train was not an entirely new idea is difficult to conceive, yet about the only really new feature was the special armored body or shell. On close inspection, it can be seen that the rest of the train was made up from regular manufactured items such as the motor and wheels from regular O gauge engines. The armored train was apparently the only set sold by Lionel that failed to stimulate sale of such accessories as lamposts, bridges, tunnels and stations. Perhaps it was because of its independent military nature and lack of harmoney with conventional railroad structures that resulted in the poor sales.

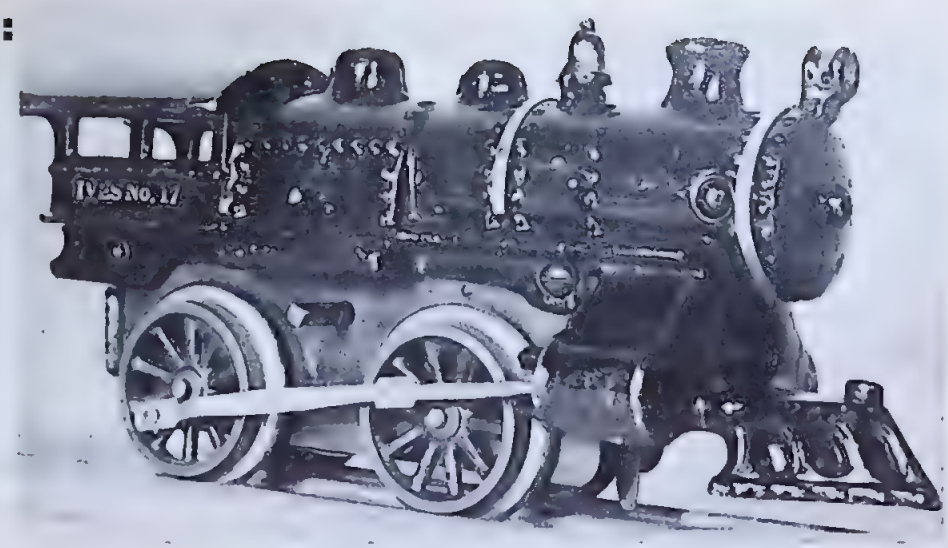
While Lionel made at least three other less expensive O gauge electric train sets, the armored car without headlight, reverse, pilots, underframe nor pantagraph surprisingly sold quite well in spite of its economy in construction. The novelty idea was undoubtedly responsible for the trains sales appeal.

During the early days of Lionel O gauge toy train production the catalogs carried the erroneous width of 1-3/8" as being the actual width of O gauge track. The track width at all times never varied from the 1-1/4" distance between rails.

The glorious armored No. 203 received as much hilarious abuse in the hands of young children, as it received distinctive display space in the hands of grown ups. In youngsters' hands the unresistable train was often attacked with pellets, such as stones, marbles, blocks and various sundry handy ammunition. Older boys would fire at it with slingshots and air rifles as it formed a target that would easily delight everyone.

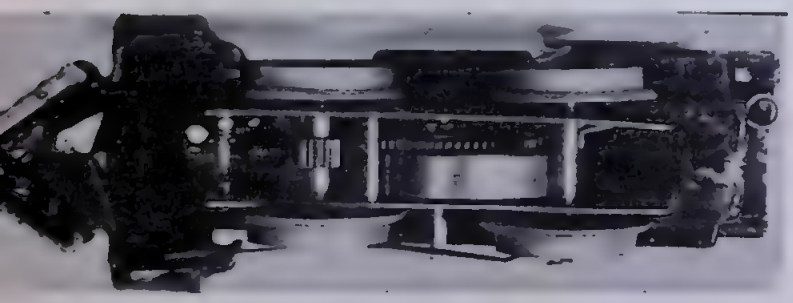
16 - DEAR MR. IVES: NO. 17

Ives No. 17 steam loco and tender was a must for thousands of youngsters in that bygone yesteryear. The collector will keep an eye out for variations.



SOMETIME during the great prolific Ives clockwork toy train era of the early 1920's a simple penciled letter found its way to the big paper stacked, wooden desk of the order department housed in the Ives Mfg. plant located in historic Bridgeport, Conn.

"Dear Mr. Ives—" it began. In a sense it was the kind of letter that may have been written by any of the hundreds of Ives' toy train customers from almost any part of the land. In part the letter read: "—I am enclosing a money order, please send me your No. 17 Ives clockwork locomotive and tender. I am choosing this engine from your different models because it is pictured so often in your catalog." What the customer meant, perhaps, was the fact that the red wheeled No. 17 clockwork locomotive with its black baked Japan finish, appeared listed both singly and as a component in several different windup sets perhaps more than any other clockwork locomotive in the famed Ives full colored catalogs which were then being issued and distributed by the thousands.

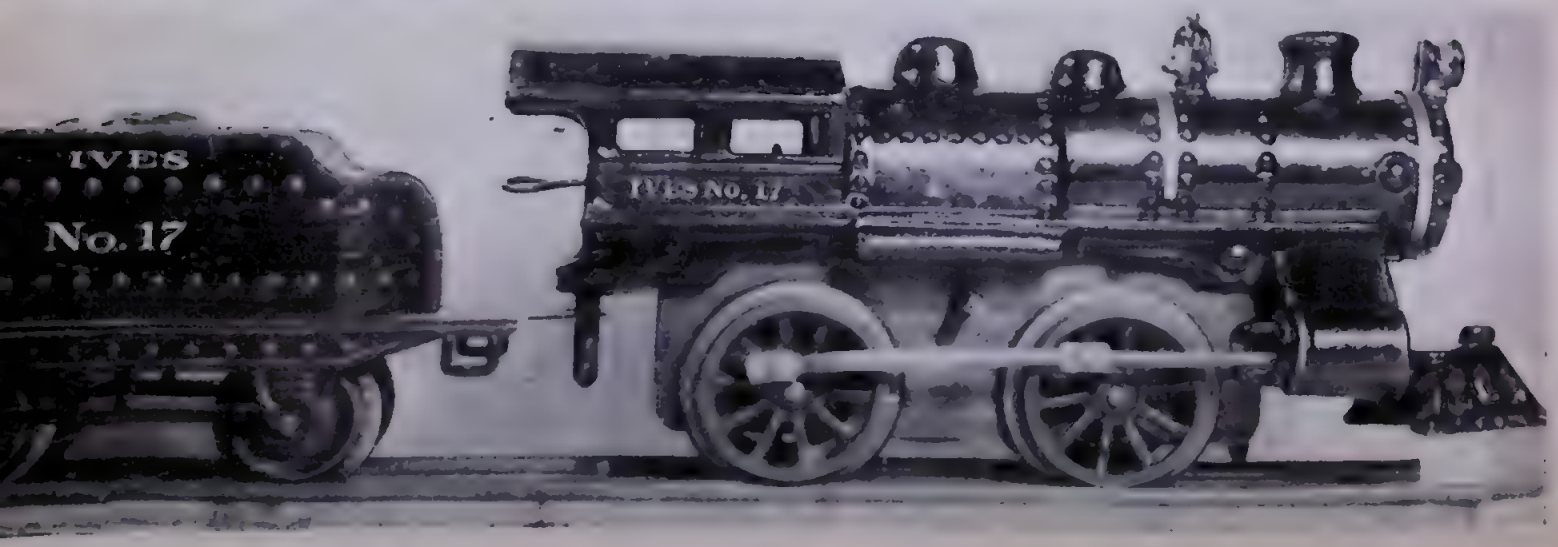


The glowing illustrations of the cast iron No. 17 engine lavished by some over imaginative commercial artist, gave it a select if not cherished preference over other Ives spring wood engines. Yet, strangely, it was not the cheapest nor the most expensive model of the generous Ives line of mechanical O gauge locomotives.

Promptly at every Christmas season, miles and miles of oval mechanical track would be laid down on toy counters of the big city and town department stores. Ives No. 17 engines by the thousands could be seen swaying and heard clickity clacking their way over the oval miniature right of ways on new bright tinplate track. These glorious factory fresh engines would pull loads of either three gleaming lithographed slick passenger cars or colorful freight cars with assorted popular road names and heralds such as found on American prototype railroads.

Often times during department store demonstrations of Ives equipment there would be at least one boy who earnestly but not really mischievously would direct his remark up to the patient smartly dressed sales clerk in an almost pleading voice, "Make it go faster Mister." In those days, the accepted method of increasing the speed of a clockwork train was simple and required no skill. A car was left out of the train in order to increase the speed by decreasing the pulling load on the engine. This was a popular method of speed control practiced almost universally. Strangely it was never mentioned in the Ives advertisements nor in any of the catalogs.

Because the No. 17 locomotive, in spite of its speed governor, had an occasional tendency to jump the track at



curves and since most counter tables were built a respectable distance from the floor, most stores promptly installed a 2 or 3 inch high fence or guard rail around the counter displaying these speedy mechanical sets to avoid risking any embarrassment such as a cracked locomotive casting caused by a sudden unexpected fall. By contrast the lightweight-tin, lithographed tender and cars were not so likely to suffer disastrously in event of a fall or drop and the bumps and bruises were taken rather lightly; the metalic crash was most dramatic. Although Ives made regular banked curved sections of track according to the original patents, these sections were not entirely foolproof and occasionally the tightly wound stored power spring motor along with the engines top heavy cast iron body with a high center of gravity would result in the locomotive jumping the track just as it would enter into the first curved section of track.

For years the head shaking sad tales of clockwork trains derailing were common to the entire toy train industry both in America and Europe. The manufacturers rightfully argued that it was virtually impossible and impractical to build individual speed adjusting mechanisms into clockwork locomotives by mass production methods designed for low cost distribution. As might be expected, the problem was never solved.

In the early years most Ives toy train enthusiasts instinctively came to enjoy the pleasures of miniature railroading on the comparative safe floors of their apartments or homes. In those windup toy days soft parlor carpets and rugs were especially desirable roadbeds for Ives miniature railway systems because they helped cushion and absorb some of the rumbling sound as the train ran over its course or tinplate track. Creaky pine or hard uncovered wood floors greatly amplified these noisy sounds and were very apt to prove disheartening to even the most tolerant and understanding parents. In the more fastidious lace-curtained parlors and living rooms, machine oil, the giver of life to these clockwork engines, was practically forbidden by the mistresses of the house and sadly the sharp geared mechanism of these delightful Ives four wheeled locomotives usually deteriorated rapidly before the normal wearing time.

The earliest No. 17 model locomotive made shortly after 1910 measured a substantial 7-1/2" in length and was strong enough to haul the No. 60 series eight wheel freight or passenger cars as well as the long attractive No. 500 series four wheel cars which were to be made just before World War I. These interesting four wheel, long bodied cars were almost as long as the engine itself with some passenger cars measuring nearly 7" in length.

In the 1920's the old No. 17 Ives locomotive underwent considerable changes. The length of the engine was reduced from 7-1/2 to 7" and its recommended cars were the No. 500 series four wheelers and thus it no longer hauled the heavier No. 60 series eight wheel units.

Two nickelplated metal boiler straps were replaced by a single strap and the engine cab was redesigned with a single unpartitioned cab window. The early fine machined cast iron red drive wheels were replaced by the die cast metal ones. Most interesting of all perhaps was that the price was increased from $2.00 for the engine and 30¢ for the tender (listed in 1912 catalog) to $3.50 for the engine and 50¢ for the tender (listed in the 1926 catalog). From the earliest days, Ives always had the policy of listing and selling locomotive tenders separately. Perhaps Ives reasoned that very likely in the course of use the locomotive would have to be replaced before the tender, because of the fragile nature of the cast iron engine body.

Every Ives No. 17 engine that left the Bridgeport factory had, besides a regular handbrake operated from the engine car, a special brake trip attachment found on the underside of the motor unit. The brake attachment was a device for stopping the engine on a special section of track that had a manual brake. In the early days before 1920 Ives made two different brake track sections—one for straight and the other for curved tinplate track. Later in the 1920 period Ives discarded this special track and made an adjustable brake section unit that could be placed on any section of track since it was easily attached by a handy clip-on arrangement. These brake sections never seemed to fail and they stopped the engine automatically when the lever was set in an upright position acting as a trip device. For years these brake units served as a delightful source of great interest to toy train fans who had to be content with the rather limited action of the single direction, non-reversible No. 17 engine.

The nickel finish locomotive side drive rods were a simple acting one piece stamped and embossed metal affair but gave the illusion of being true to prototype because of their clever design. The fine lines of the imitation rivet boiler remained unbroken except where actual long rivets were used to hold the two halves of the cast iron body together. The two big rivets, one near the front section of the boiler and the other underneath the cab window section, were greatly oversized and did little to preserve

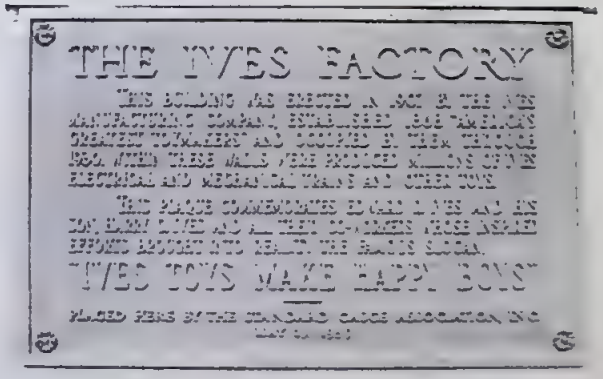


Photo by Hal Carstens of the Ives factory building at Bridgeport, Connecticut; photographed in May 1971. Now used by a paper imprinter, the plant is still largely as it was in Ives days prior to 1930. An Ives transformer still operates the door bell and Ives parts are still to be found between the floor boards. Walls still carry Ives numbers, labels, and legends. Plant is not open to collectors.

Opposite Page: Several views of the Ives No. 17 0-4-0 cast iron locomotive with tinplate tender, plus underside view of frame and clockwork motor. Ives locos are still fairly common at meets.

the fine lines of the body. A large head machine screw was used to hold the cast iron locomotive body to the clockwork motor unit and this proved an additional eye sore. Its location just underneath the boiler cat walk and back of the steam chests were quite conspicuous. These machine screws were never painted but were left a bluesteel color to match the rectangular motor unit or housing. Requiring only a few short turns to be seated into position, these machine screws were the job of every Ives owner who loved to tinker.

The cast iron machined drive wheels had ten spokes each and measured 1-1/2" in diameter. Counterbalanced and properly formed, these extra strong drive wheels would outlast the geared clockwork mechanism itself. The wheels helped to make up the ample height of the engine which measured some 3-1/2" from the tip of the cast iron bell down to the outer rim of the drive wheels. The locomotive's greatest width appeared, as might be expected, just at the steam chests where the measure reading was 2-1/2". This width was much greater than the O gauge mechanical track measuring 1-1/4" but it was nicely proportioned.

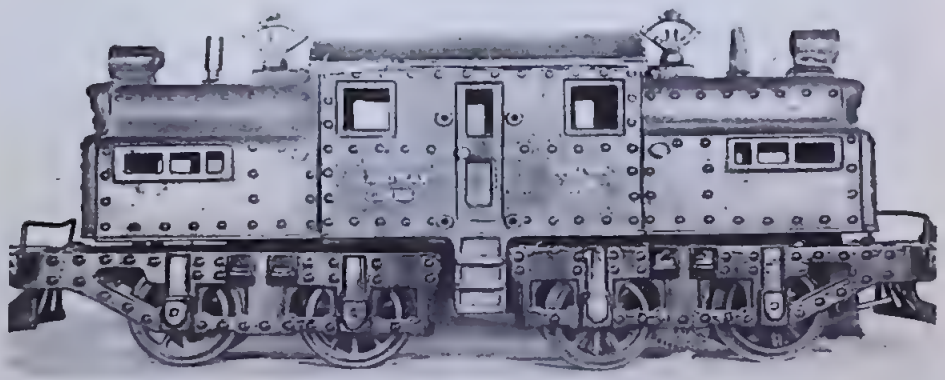
The heavy appearance of the Ives No. 17 was quite interesting as it seemed to weigh much more than it actually did. The total weight of the engine without the tender nor windup key (which was removable) was 26 oz. This weight was found to be just heavy enough to furnish good traction power even though only two of the drive wheels were geared to the motor. Although Ives soundly recommended that their trains should be run on level track—these mechanical toys could climb a small elevation or grade without too much effort because of their powerful spring whipped motor.

The compact rectangular clockwork motor unit which housed the gears, spring and axles measured approximately 4x2x1" in size and was made of rigid steel plate. This incidentally was perhaps the only part of the No. 17 locomotive that was left unpainted, however the hardblue steel gave the unit a particular color of its own which never seemed to fade with age and use.

Every No. 17 engine was finished in hard glossy black baked Japan color with bright red wheels, gold painted bell and headlight.

17 - IVES NO. 1 GAUGE

Ives line of No. 1 Gauge trains would have been enough to endear it in the hearts of many fans, but it later gave way to Std.



Ives No. 1 gauge No. 3239 electric locomotive with cast iron body.

IN 1907 the concrete blocks had hardly been set into place in the great new Ives factory building in Bridgeport, Conn. when weighty problems came into the life of the two business minded Ives brothers.

Richard and Harry Ives had been making, selling, and servicing toy clockwork trains both in O gauge and No. 1 gauge for at least a half score of years and seemed to be content, successful and happy. All this was quite evident by their gradual expansion, and finally the purchase of the new large building plant in Bridgeport.

Prior to this time the toy electric train, thought of as merely a passing fancy novelty, was never mentioned nor discussed in the Ives plant, where the clockwork toy was of all importance. There was every evidence that throughout the entire Ives factory, the loyal employees respected this understandable silence instilled by the wise brothers.

Even for years before the slogan, "IVES TOYS MAKE HAPPY BOYS" originated, there was every plausible indication that Ives toys did make happy boys—at least two grown boys—the Ives brothers.

The little toy train empire of Bridgeport, revolving around a clockwork world of its own, was soon to be rudely shaken by the rumbling of the new fangled toy electric trains rushing to an eager growing market. With mounting competition from a dozen or more American and Foreign toy electric train manufacturers, Ives could no longer afford to ignore the electric train as a sales supplement to its dwindling mechanical train sales. The capable Ives staff, with scores of clockwork engine and car designs to their credit, rolled up their sleeves and got busy. The workers' efforts were amply rewarded when in 1910 the first O gauge electric train bearing the proud Ives label left the factory hand assembly line.

Ives, a late comer into the field of electric train production, had the advantage of the experience of other earlier pioneers of the novelty toy. It quickly and wisely adapted only those ideas which had proved successful for the earlier manufacturers. With its convenient technical background, Ives just couldn't help but to be a real success right from the start.

The first line of O gauge electrics sold so well that Ives hastily decided to include a line of No. 1 gauge electrics. Two years later, after testing and experimenting, the first of the big No. 1 gauge electric outline locomotives was ready to leave the Ives shops. The model was called No. 3240 patterned after the popular east coast New Haven prototype. This was followed very shortly by the addition of a companion locomotive No. 3239. These two 0-4-4-0 type electrics with heavy cast iron bodies were to be the pride of the Ives engine roundhouse until the early 1920's when Ives discontinued the production of No. 1 gauge trains and in turn began making standard gauge electric trains. The No. 3240 locomotive had a double gear manual reverse motor and was 13-1/2" long. It boasted a front and rear headlight, detailed handrailing and chains suspended between the front power truck and the trailer truck. These little extras differentiated it from the No. 3239 which had one operating and one dummy headlight and a slightly

shorter length, 13". Although it lacked the chains and handrails, the power and trailer trucks, made of cast iron with machined iron spoke type wheels, were identical in both locomotives. On close examination the 3240 engine showed slightly more rivet detail. Both the locomotives had a heavy sheet metal roof on the engine cab. These were the only locomotives made by Ives at that time in which such an arrangement or combination of sheet metal and cast iron was being used in body construction. For the operation of these No. 1 gauge (1-7/8" between rails) Ives made a special transformer for direct current and a 110 volt alternating current transformer. The best alternating current for the operation of these engines with a load of cars was from 12 to 18 volts and 2 to 2-1/2 amperes. The recommended direct current was, according to Ives Booklet of instructions 6 to 8 volts and 2 to 2-1/2 amperes.

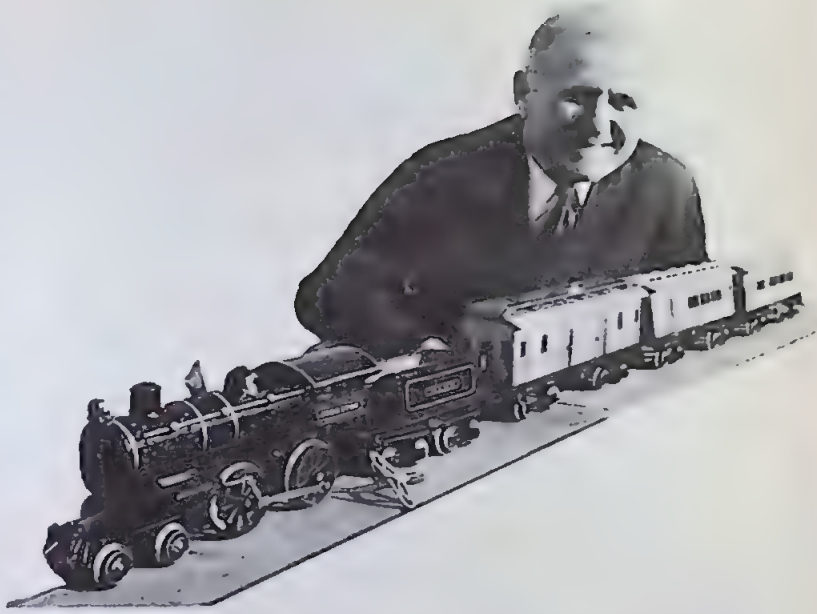
Unlike other early toy train manufacturers Ives equipped every train with a control switch, as it was listed in their catalog. This was really a rheostat to be used with either a transformer or dry cell batteries.

The flimsy and unreliable toy train headlight lamps of the period were almost a bug-aboo among model railroad fans. In spite of their ceaseless glowing attraction they were seldom ever guaranteed. The Ives Corporation, purchasing their lamps from an outside source, tried to provide for every means to safeguard these 8 volt headlight lamps—even in furnishing the locomotives with a special wire coil resistance on the headlights. To protect the user of these variable alternating or direct current engines, Ives provided a small single switch lever on the side of every engine with the simple letters A and D marked. These letters were to designate alternating and direct current. The lever was to be set in proper selection before the engine was placed on the track with the power turned on. Ives instruction literature always had a word of caution on the subject.

Ives No. 1 gauge owners were offered a wide selection of electric track. Their half and quarter track sections were available in either curved or straight forms—as well as regular 14 inch straight sections. For previous Ives fans who wished to convert their No. 1 gauge mechanical track into electric track, Ives made and sold adjustable third rail strips with clip-on features. These were likewise made in all lengths full half and quarter. Except for 90° and 45° crossover track sections and right and left manual switches there were no other electric accessories made prior to World War I in the No. 1 gauge electric line except for electric station lamps. Electric semaphores and block signals were yet to be produced at this early stage.

Ives made a generous contribution when it came to the matter of bridges for these electric trains; both in the matter of price and selection.

There was a choice of a simple two piece 28" long culvert type bridge, a double arch three piece 42" long bridge, a three piece single trestle bridge 42" in length, and a mammoth 56" four piece double trestle bridge.

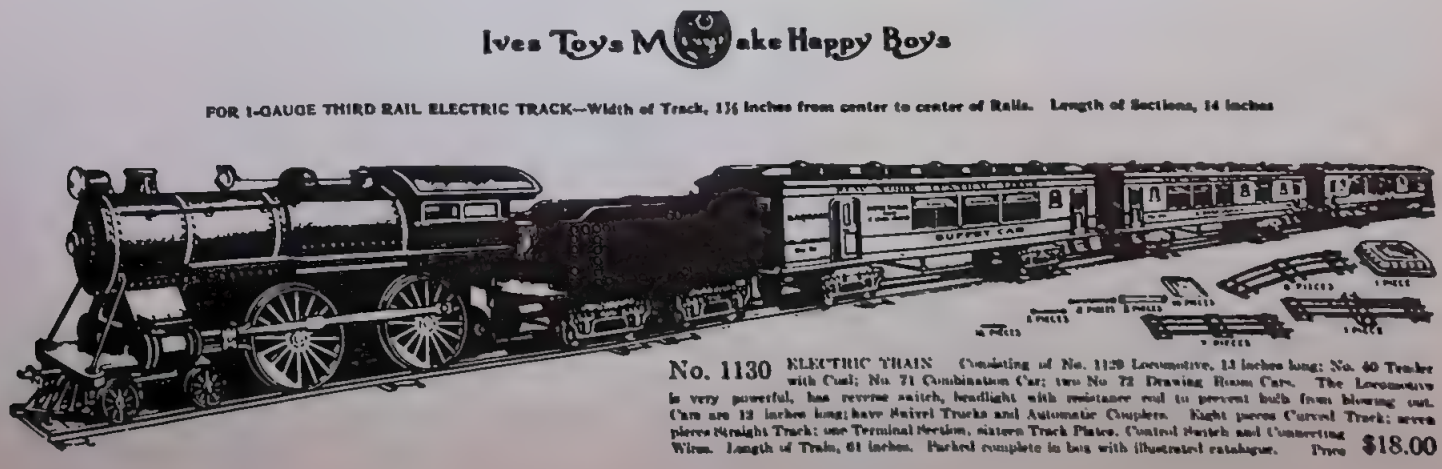


Ives Twentieth Century Limited Express in No. 1 gauge by Ives had No. 40 clockwork loco and tender, No. 70 Baggage Car, No. 71 Buffet Car, and No. 72 Pullman; all in lithographed ivory finish. Train was in the collection of Bill Vagell. Cars are sometimes in white.

In its day, the No. 3239 was the heaviest iron giant on wheels that ever rolled out of the Ives factory. The entire engine was practically all cast iron construction; the body, power and trailer trucks and pilot all being cast iron down to the iron spoke wheels. The cast iron headlights and pantagraphs being part of the body naturally contributed to the heavy gross weight of the engine. Since the electric motor had to be cooled by air, Ives made sure that the open windows in the engine cab, cab doors and end doors did their share in keeping the air circulating and the motor from over heating. The open side ventilators were another sensible method used by Ives realistically to aid engine cooling.

About the time that the No. 1 gauge electrics came into vogue, Ives introduced its patented semi-automatic couplers and of course these de luxe features were included in all of the big No. 1 gauge locomotives and cars. Luckily for the owners of earlier Ives cars, the new semi-automatic couplers were serviceable with old hook type couplers when used in a manual fashion.

In 1915 the No. 3239 locomotive along with a Buffet car

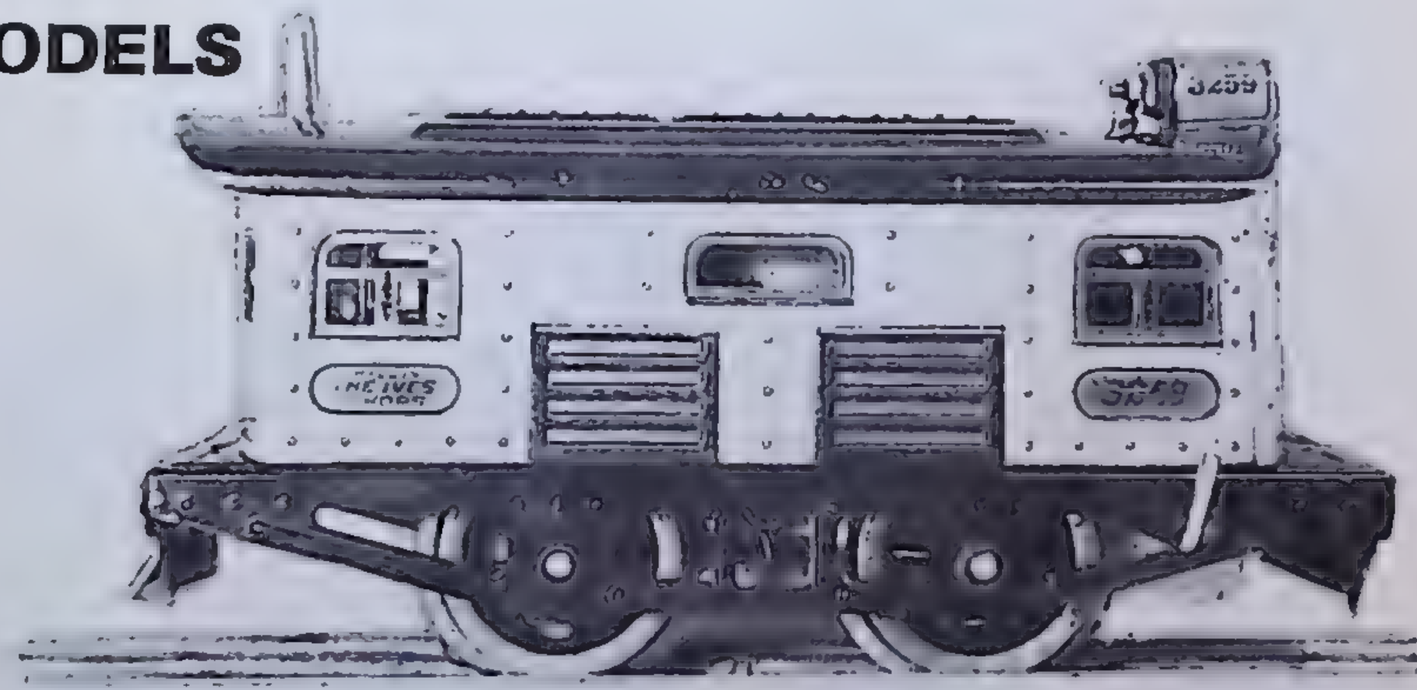


No. 71, two No. 72 Coaches, 16 pieces of track making up an oval of substantial size, connecting wires, track plates, and control switch was listed as set No. 1130 selling for $18.00. During the early pre-war years Ives track plates became a toy railroad necessity. These track plates were square flat pieces of sheet metal with two open slot sleeves which fit over the end sections of sectional track ties; they were a simple inexpensive device for joining the track and holding track sections together.

The No. 71 series No. 1 gauge cars as they were called at the time were all eight wheel swivel truck cars and were all a uniform 12" in length. Each car had truss rods, steps and ventilated roofs. Beautifully lithographed, each car presented a handsome appearance and, because of their comparative large size, the lithographic detail was clear and neat. Across the varnish-like glossy imitation scribed wood sides the words, "Twentieth Century Limited" appeared in a trim panel just underneath the roof. The Buffet car had in addition to its name, the lettering "Chicago and New York" also "Baggage" placed next to the door of the Baggage compartment. The coach had "Chicago" lettered on the car sides underneath the long row of double windows. The stained glass in the windows was represented by colorful lithography. The raised roof mushroom ventilators were properly spaced and being five in number they seemed to look true to form. The open side ventilators on the roof gave additional detail to the upper portion of the car. In the original design of these cars Ives chose these open ventilators rather than simulated lithographed ones. The doors of these passenger cars were dummy ones and did not open, however, the doorways found on each end of the cars were stamped out of the metal of the body—actually there were no doors only doorways. Likewise each end of the car vestibule had small stamped out windows. The small windows found on the vestibule side were represented by the lithograph process; glass and frame, all quite expertly finished. Apparently Ives did not make any observation car in this early No. 70 series, although a baggage express car No. 70 was sold as an extra unit. The baggage car had four doors, two on each side plus the vestibule doors. There were four small windows in this baggage car, as well as at the vestibule end of car.

18 - IVES ECONOMY MODELS

Ives made an O Gauge economy line in the later 1920 period featuring the superb Ives lithographing, so sought after by collectors of today.



Ives No. 3259 was cheap 0-4-0 electric New Haven type, lithographed.

IN 1926 there were thousands upon thousands of boys made happy with IVES toy trains. That same year these happy boys helped the IVES Corp. to ring up one of the best sales years in history with almost a million dollars in business volume.

With a work force of almost a new record, 200 people, the giant tinplate firm, knee deep in prosperity, chose that year to bring out a new cheap or economy electric train set. This set was the least expensive set in the entire line of Ives O gauge electric train sets and featured an entirely new light weight New Haven type four wheel locomotive that was practically all tin construction except for the motor unit and underframe. Because of its striking design, it was perhaps the first and only inexpensive locomotive of its kind ever made by any of the big toy electric train manufacturers.

Why the Ives Corp., chose to introduce the new cheaply made toy train set when it was in the midst of one of its most prosperous business periods is indeed a very interesting question. Perhaps it was that Ives tried to induce the regular purchasers of its clockwork toy train sets to try a new mode of miniature railroading experience—by means of a relatively cheap electric train set—something priced within the easy reach of windup set buyers. Another plausible reason why Ives created this inexpensive set might have been that Ives just didn't care to let go of the low price toy train business, since all of the big toy train manufacturers were mass producing cheap sets and trying to get the biggest share of the market.

Among one of the men who contributed his talents and skill to the appearance of the new low cost electric railway set was William E. Thorn who had been with the Bridgeport toy firm since the year of 1918 when he was appointed chief engineer by Mr. Harry Ives. Although Mr. Thorn's official title was chief electrical engineer, his every day duties extended beyond the realm of electricity and he was affectionately known as the chief trouble shooter among the Ives plant employees. Big hearted and good natured with a love of toy trains that perhaps matched only that of Mr. Ives himself, the industrious Mr. Thorn helped to design the No. 3258 and the No. 3259, the strikingly inexpensive tinplate engines which were so radically different from the conventional types that department store buyers almost begged for the opportunity to place their orders for them, when they were first made available. Almost everyone connected with the toy train industry had seen the cheap light weight electric trains made in Germany, but the little Ives tinplate lithographed four wheeled O gauge engine was the first of its kind ever made in America on a large scale production basis.

The first economy model that rolled out of the Ives shops carried the number 3258 and was priced at $5.00, which was exactly one dollar less than the lowest priced O gauge electric engine listed by Ives. A second somewhat modified model brought out by Ives was the manual reverse No. 3259 which was slightly larger than the original 3258. Both of these 0-4-0 New Haven body type engines were constructed of the same light weight tinplate metal. The

body of these engines was finely lithographed and fashioned of the same tinplate sheet that was used in making up the O gauge freight and passenger car bodies of the Ives line. Thoughtfully the Ives Corp. chose the New Haven box type body design for the locomotive because of its simple style which permitted economy in material and manufacturing procedure.

In the Fall of 1926, the entire fleet of Ives O gauge electric engines came equipped with the new brass name and number plates. The No. 3258 and No. 3259 were the only exceptions and they had imitation brass plates made possible by the clever lithographic process. The engine numbers and the lettering "Made In The Ives Shops" appeared in black against a gold yellow background. The open window frames, side slit body ventilators and door frames were likewise expertly lithographed in a gold brass color to simulate brass inserts like those found in the Ives more expensive locomotives. Every detail of the doors, windows and side ventilators was further enhanced not only by Ives fine lithographic process, but by the embossing process as well. Although the lithographic printing process made directly on the tin locomotive body formed a color layer a fraction of the thickness of a single coat of enamel paint, it nevertheless was free from chipping and flaking and presented a hard finish that resisted all kinds of wear. Unfortunately, the engine body, like all lithographed tinware, was easily scratched.

Aside from the motor unit and drive wheels, the one piece roof and the rugged underframe of these little box like engines were the heaviest constructed parts of the economy model.

To keep engine construction within a somewhat tight production budget, many of the delightful superstructures and body details had to be omitted. There was not a single trace of a handrail to be found anywhere on the engine. The engine bell and overhead pantograph common to practically all Ives electric locomotives were also conspicuously missing in this cheap model. Fortunately Ives provided a neat and simple electric headlight mounted on the roof of the engine. The headlight was made of light weight lithographed sheet metal. Inexpensively constructed, it was—just a half round shield attached to the body by means of metal fingers. All of the Ives electric engines had the round or tubular pedestal type headlights with this exception found only on the No. 3258 and the No. 3259. Obviously weak in structure it was easily bent and dented in careless handling. In spite of its short comings it did present a neat appearance, with engine numbers in black against a yellow brass color background, stopped with a thin black line border.

The formed and pressed one piece sheet metal roof was embossed to provide a raised mid-section and a rolled roof edge, all with a generous amount of rivet detail. This roof was gently arched to give the engine a true prototype look and extended slightly over the engine body on each end. Designed similar to a passenger car roof, it could easily be removed by sliding over the engine body on each end either in a forward or backward direction providing the wire leading to the headlight was disconnected before hand. This novel roof arrangement was very likely the first of its type ever to be used on an Ives O gauge engine. The fact that Ives was very proud of the readily and easily removable motor was evident by the statement that appeared in the catalog under the description of the engine, "Its sturdy motor can be easily removed, due to the patented chassis construction."

The stamped steel underframe was very similar to that made by Lionel and American Flyer during that period. The stamped steel underframe was Ives first venture with that type of underframe in as much as the cast iron frame on a locomotive was almost an Ives trademark. The recommended transformer used for the operation of these Ives locomotives was the No. 203 of 110 volts and 60 watt capacity. This instrument delivered 5-1/2 to 13 volts in graded 1-1/2 volt steps. Finished in red or black enamel it sold for $3.50. Each transformer had an aircooled sub base of metal and came equipped with electric cord and a two piece socket plug ready to use. Ives made seven different types of transformers all of which were built to the specifications of the National Board of Underwriters. Like all good Ives products, the smallest No. 203 transformers carried the same guarantee as the largest No. 208 selling for $10.00.

Ives Nos. 551 and 558 passenger cars are typical of many of the Ives 6-1/2" long passenger cars and were lithographed. Car in Carstens collection is light green with glod trim. Who said all Ives passenger cars were numbered in the 60 series? Litho work was excellent.

The motor unit of the No. 3259 differed very little from the regular Ives line of O gauge motors. Perhaps the most important difference was in the brushes. While the large O gauge motors had screw cap type brushes with carbon elements, the No. 3259 had fine copper gauze brushes which were held against the commutator by phospher bronze springs. The copper gauze brushes were more likely to cause sparking than the more expensive carbon brushes. It was the use of such brushes and other similar economies that held down the manufacturing cost of these engines. The hand reverse lever on the bigger No. 3259 was attached to the motor frame and operated on a right to left direction. The motor side plates, made of heavy steel, were held together by rivet type machined pillars. The field, no different from other types, was made up of laminated iron plates that were capable of magnetic properties when charged electrically. The wheels were regular Ives die cast construction fitted with steel tires for good wearing qualities. The center third rail collectors, of the roller type, were made of hard brass. These rollers along with the motor brushes were replaceable items that could be purchased from the Ives service department.

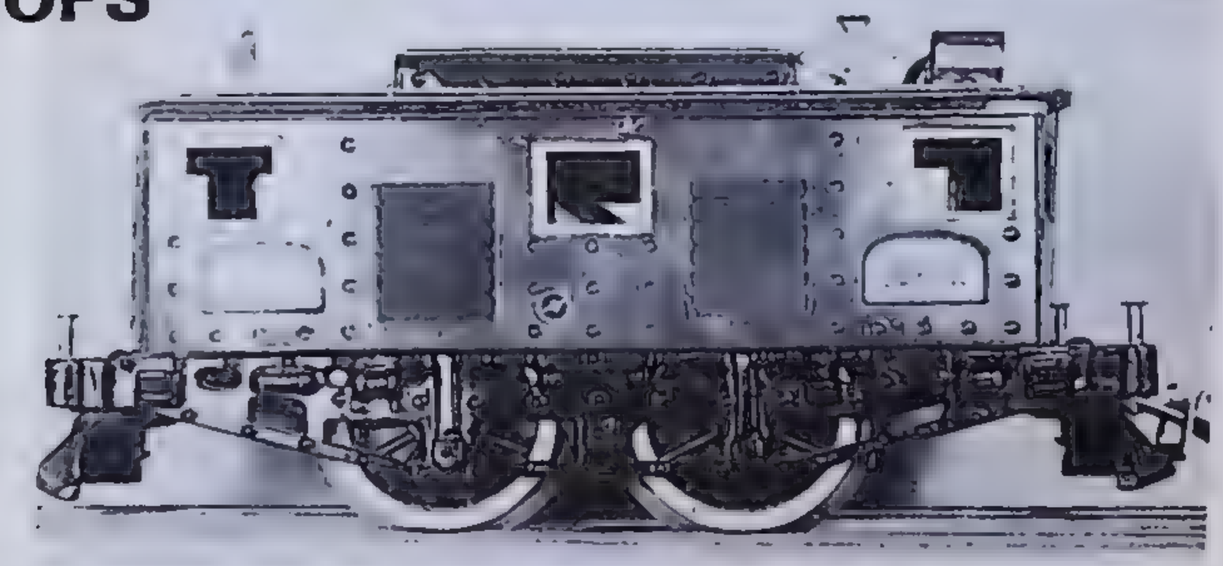
The passenger cars used with these light weight engines were the long new 6-1/2" type, unlike any of the older series four wheel tinplaters. Like the older series cars, they were entirely lithographed except for the roof and underframe. Among some of the unusual features found in these cars were the extra large hook couplers and the box car like steps found at each of the car side entrances. Although the car windows seemed correctly proportioned, the detailed lithographed doors were slightly undersized for the car body and added a somewhat awkward look to these otherwise fine tinplate passenger cars.

The regulation lettering, "IVES RAILWAY LINES" appeared in fairly bold style across the panel just above the long row of car windows. Each car was positively identified by the car number and the type of car, chair car, observation car, etc. The chair car had high type windows with a definite vertical pattern, while the observation car had double type arched windows lithographed to represent stained glass. The observation car had the distinction of having arched type doors and a heavy stamped and formed platform railing made of sheet metal. The short car step looked out of place since it was entirely too small for the observation platform. Ives furnished the same stamped and formed floor combination underframe for all of its No. 500 series cars. These underframes had embossed rivet detail that closely matched those of the locomotive underframe, big in size and well defined.

In spite of the light weight sheet metal used in the construction of these engines and cars, there were no sharp edges nor corners to be found anywhere as all of the parts were smooth and rounded and fit together closely.

19 - MADE IN THE IVES SHOPS

Standard Gauge trains had more bulk, gave more sparks, were heavier, made more noise, and had a unique charm all their own.



Above: Ives No. 3235R was the smallest electric loco in the line. Ives 3236 produced about the same time was similar but sample shown had steel frame. Later 3236 was essentially a Lionel No. 8.

BACK in the days of 1925 when most contented families lived in spacious houses with large comfortable living rooms and where breathing space was no family problem, toy electric trains enjoyed the wide open spaces of these dwellings.

Carpet covered floors deadened the thrilling rumbling sound of wide gauge or standard gauge size heavy electric toy trains. This once popular equipment ran upon conventional three rail electric train track that measured 2-1/4" in width between rails. Basically these trains were very similar in their construction to the ordinary smaller size O gauge units. Various patented features of both gauges were equally shared and the large manufacturers making these standard gauge trains (American Flyer, Ives and Lionel) offered various types of engines, cars and complete sets as well as accessories.

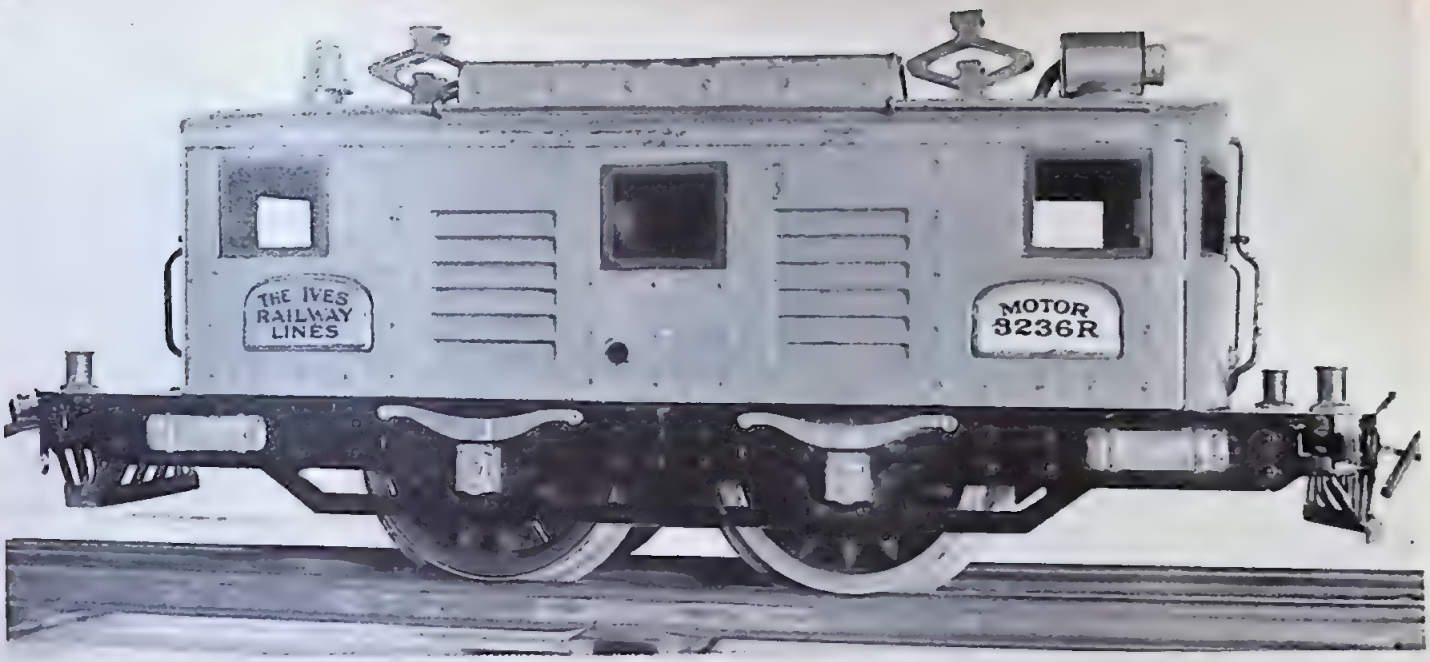
As in O gauge trains, the popular sellers were the ever favorite 0-4-0 electric types. For example, Ives made five different electric body type models and only one steam type in standard gauge.

The Ives No. 3235, a "New Haven" box type electric 0-4-0 was perhaps the biggest seller in the standard gauge line. This 11-1/4" long steel body electric loco was the least expensive of the Ives fleet of wide gauge engines, yet it was powered with the same motor as were the larger, higher-priced locomotives. These "New Haven" locomotives were made in two models, one with a manual reverse switch and the other with an automatic reverse with a remote controlling switch. Ives locomotives equipped with remote control were identified by the letter "R" appearing along with the engine number. Remote control engine reversing which today is a regular feature incorporated in tinplate trains, was than a new idea in toy train railroading—an idea first worked out in 1923 by the Westinghouse engineers and perfected by American toy train manufacturers. Like any successful new invention, it helped to sell more trains because of its almost irresistable appeal. Before remote control was perfected, manual reversing and various reverse switch tripping devices used on track sections were very common.

The standard gauge trains had a peculiar charm of their own; something that O gauge trains lacked in comparison. Being much bigger in size and heavier in construction, they made more noise and gave off more and brighter electrical sparks when operating. All standard gauge trains used somewhat larger size toy electric transformers because of their larger motors. To insure a smooth running train, a voltage of 15 or 18 volts was required.

In general, men and older boys were especially delighted with these large wide gauge locomotives as they were much easier to take apart, clean and adjust—so that somehow a fellow never had the feeling that he was "all thumbs." This same reasoning applied equally well to the rolling stock and accessories of all standard gauge items. The additional or higher cost of standard gauge tinplate was not too much of a problem. Perhaps the satisfaction gained by the happy owners of these trains more than offset the higher cost.

Early Ives sales figures proved that the buying public was quite receptive to standard gauge train sets and many who bought their first electric train chose the wide gauge size simply because it was the largest available. Many thrifty parents believed that because of the higher price the wide gauge train sets were more durable in construction and hence they would last much longer. Strangely, these thoughtful parents were not entirely wrong. In the hands of younger children, the standard gauge locomo-



tives and cars were less likely to be mishandled or abused simply because of their larger size and greater weight.

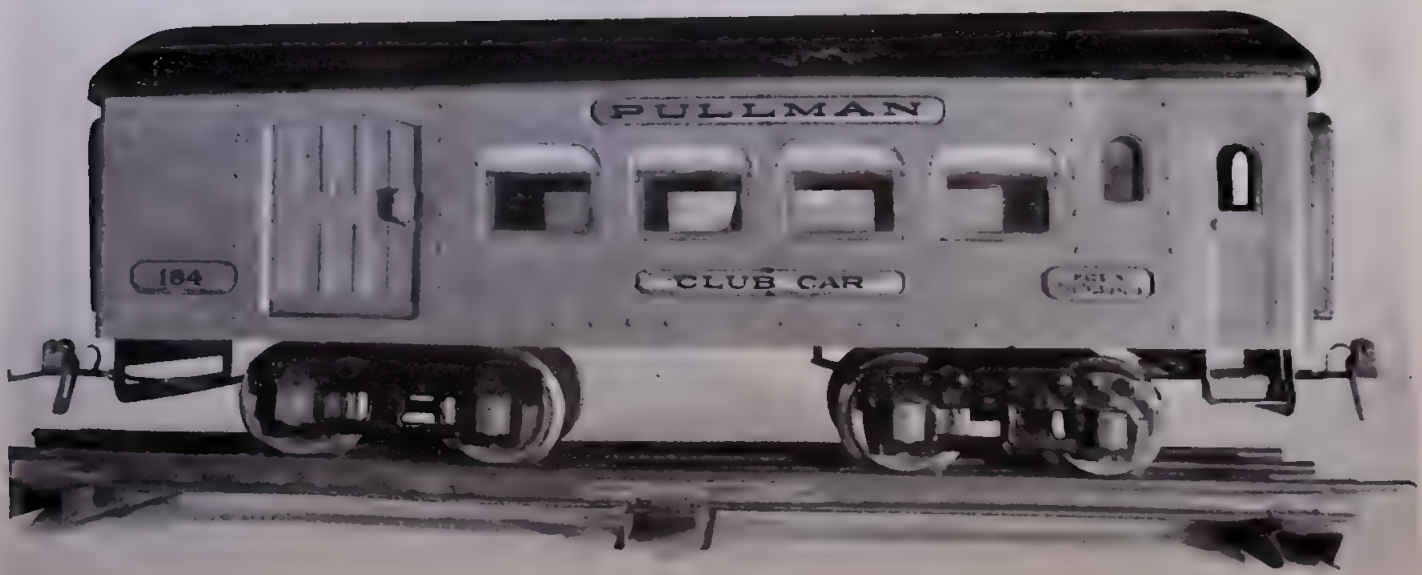
The simple box like design of the Ives No. 3235 locomotive was without question the least expensive to manufacture of the Ives line of locomotives. Because of its low cost construction, fine body details were of necessity reduced to a minimum. The heavy cast iron underframe was of a similar type used for several other Ives electric locomotive models. In later models, these iron underframes were replaced by pressed steel types which proved far superior and much less expensive. Polished brass locomotive and car plates were introduced by Ives about this time and soon became a standard part. It proved quite surprising how much of a very interesting change these little brass nameplates could accomplish. The bodies of Ives cars and locomotives took on a new keen sparkle regardless of the finish. Bright polished brass nameplates created a beautiful color contrast. They added a magic-like glamorous touch—but sadly at the expense of realism.

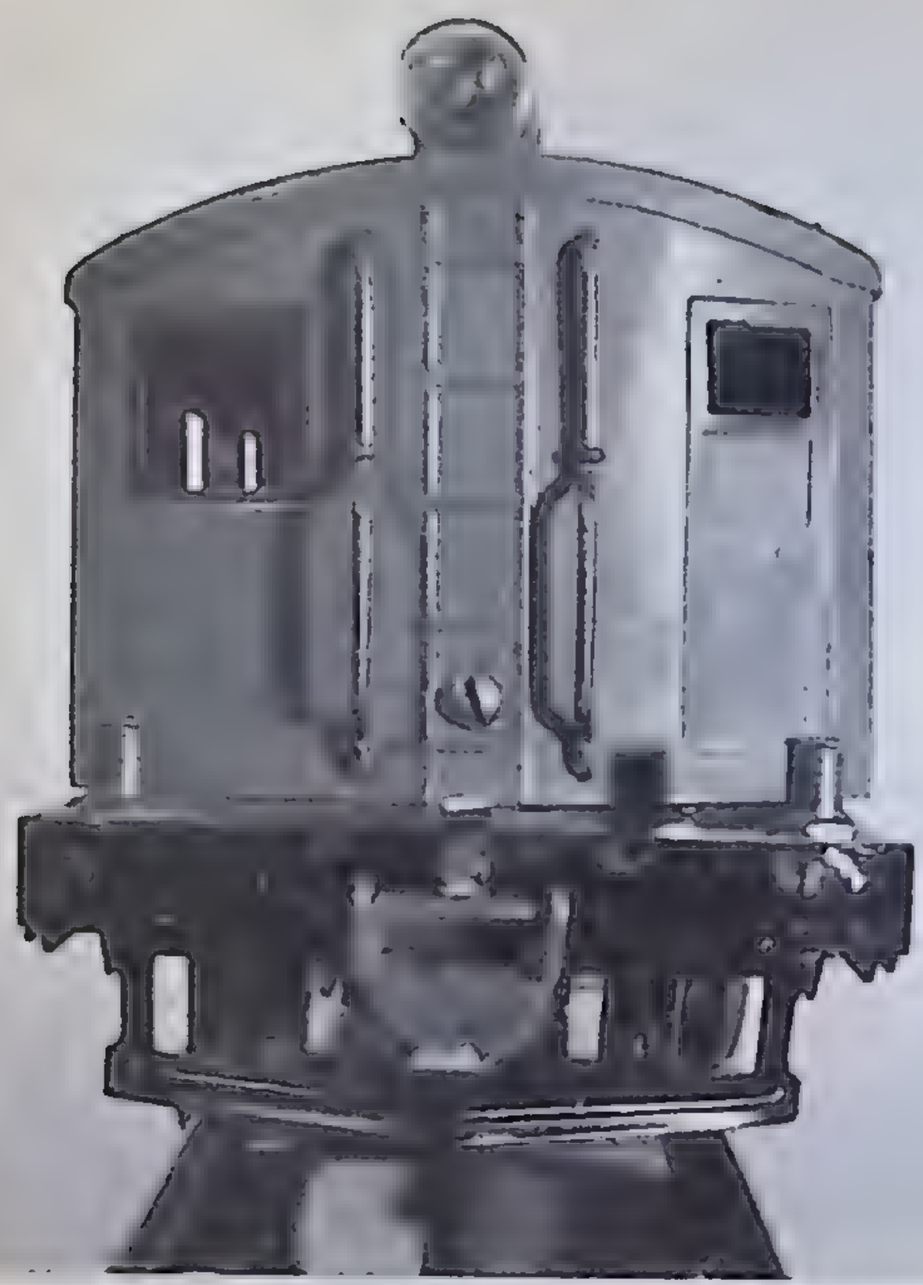
The Ives Corp., like any other business concern manufacturing a competitive line of goods, tried to make its products as individual as possible. Basic body designs, of course, differed among the engines and cars of the big three American toy train manufacturers but each in turn tried to improve on standard parts for individuality and trade mark effects. Ives did succeed to improve on a standard part of their locomotives—a part that was perhaps very common but never the less very essential, mainly the electric locomotive headlight. To make their headlights unlike that of any other tinplate engine, Ives made brass octagonal units exclusively on their standard gauge electric type models.

Large oversized embossed rivet detail and broad louvre type ventilators helped to break up the otherwise very plain sides of the engine body. The fairly large rectangular windows had more than just a decorative function—they actually aided in ventilation and helped to keep the big Ives motor from overheating. When used excessively, overheated motors were very often the source of engine trouble.

On each of the two pilots, two prominent brass socket type flag holders were affixed to the iron underframe sec-

Ives No. 184 Parlor Car from Carstens collection in unusual burnt orange color. Cars were also offered in a variety of other colors.





Front view of No. 3236R from Carstens collection.

tion. The engine roof had a high raised portion in the mid-section and this also was decorated with huge extra size embossed rivet detail. Although the bell and headlight luckily escaped the over generous dimensions and were fairly well proportioned, the pantograph was hopelessly undersized. A close fitting long brass handrail hugged the engine roof for the entire length.

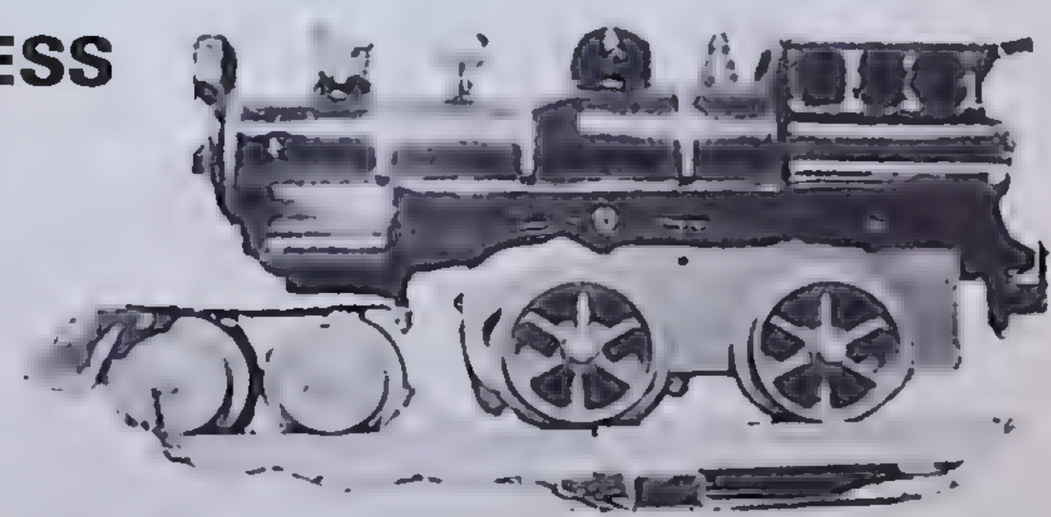
Ordinarily the Ives loco No. 3235 was sold in a set consisting of the engine, two passenger cars, a No. 184 club car and a No. 186 observation car along with an oval of track. The passenger cars were 13-1/4" long and featured such detail as interior lighting, brass name plates and embossed brass journal boxes on trucks. These cars came in colors of brown, red, gray or tan and all had black trucks. The locomotives were similarly finished in matching colors. In large city retail stores, Ives found by experience that red and tan were the popular train set colors and so wisely began turning out a greater percentage of finished sets in these colors.

The standard gauge track was made in sections just as the O gauge track except that each section was of course much larger. Straight sections measured 14" in length and curved sections were 16" in length.

Even in its most prosperous years, Ives never failed for a moment to seize an opportunity to promote its products. So it is with little wonder when we see small brass plates with the inscription "made in the Ives shops" appearing on the sides of its passenger cars; just another example of Ives ingenuity.

20 - LIMITED VESTIBULE EXPRESS

In whatever variation, Ives' great No. 25 O Gauge 4-4-0 is undoubtedly one of the great toy locomotives of all time.



Early No. 25 Ives clockwork engine had no side rods, six-spoked drivers, and three cab windows per side. Tender was Nos. 11 or 25.

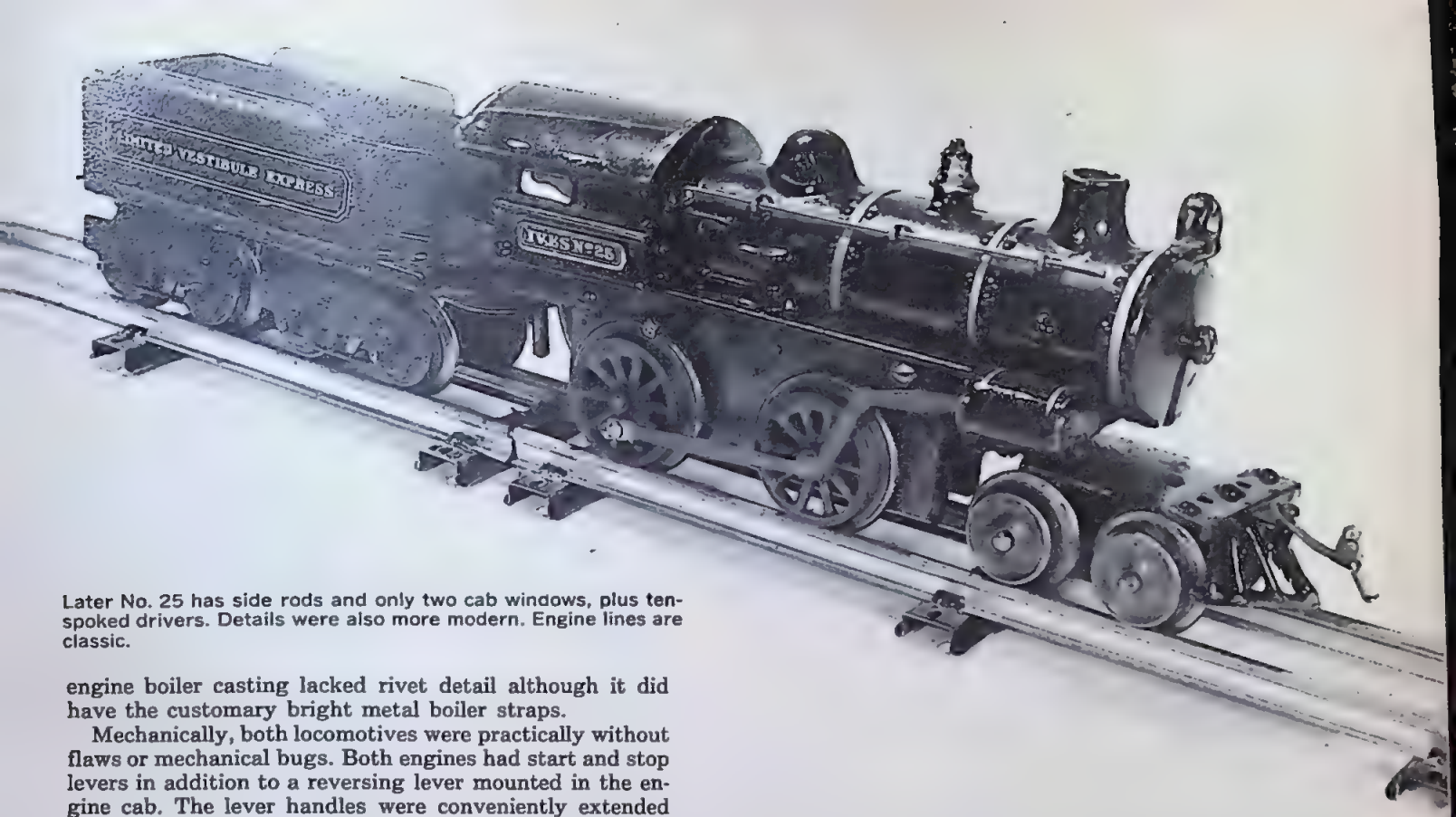
Right Opposite: Catalog drawings of Ives Limited Vestibule Cars for O gauge. Inside framed trucks were first Ives truck type.

THE sprawling, cement block, Ives factory in Bridgeport, Connecticut, busily engaged in turning out clockwork toy locomotives, cars and accessories, found a bright future increasing every Christmas toy season since its track type trains were first introduced to the public around the turn of the century. Hardly content with a fleet of several different 0-4-0 steam type locomotives which were already in successful production, beaver-like Ives brought out a then popular 4-4-0 type in 1903. Was such a novel rail toy possible? An eight wheel locomotive with clockwork power of O gauge size? Would such a multi-wheeled engine stay on the rails on curved tinplate track?

To finger pointing skeptics, determined Ives proved that it could do the job and the little eight wheel locomotive continued in mass production up until about the World War I period when perhaps material shortages and war emergency conditions brought them to a patriotic stop.

Ives believed in uniformity and system and so the 4-4-0 locomotive, a newcomer to the series, was labeled the No. 25. A matching No. 25 tender accompanied the locomotive. For some reason or another, a few of these locomotives had tenders with a No. 11 lettering.

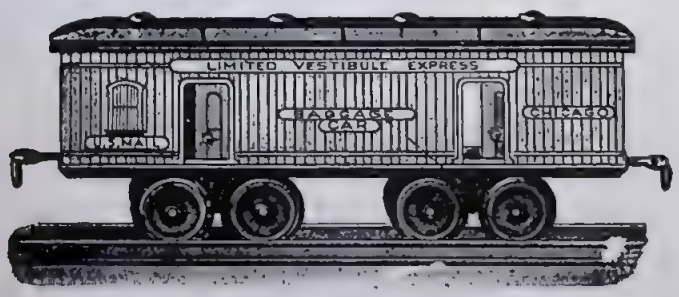
The No. 25 clockwork locomotive quite appropriately appeared in two versions or models—an early model made from about 1903 to about 1910 and a later model made after this date and up to about the World War I period. The two models could hardly be confused as they both had very distinctive features. The early model was manufactured without any side rods or valve gear and was equipped with a four wheel tender. Lettering on the tender appeared as L.V.E. No. 11 or No. 25 on both sides. The initials, of course, referred to "Limited Vestibule Express." It should be remembered that at that time the words "Limited Vestibule Express," had a strong railroadiana appeal, just as the word "streamliner" does today. The engine cab had three distinct window frames on each side. The headlight was the old fashioned square type and was accompanied by a large or rather tall fluted or flared smoke stack. A very pronounced enlarged boiler diameter appeared next to the engine cab, giving the locomotive a top heavy appearance, so much so, that the drive wheels looked hopelessly under-proportioned. The Ives cast iron machined drive wheels had six spokes to the wheel which, unfortunately, was a very poor and unrealistic detail. The

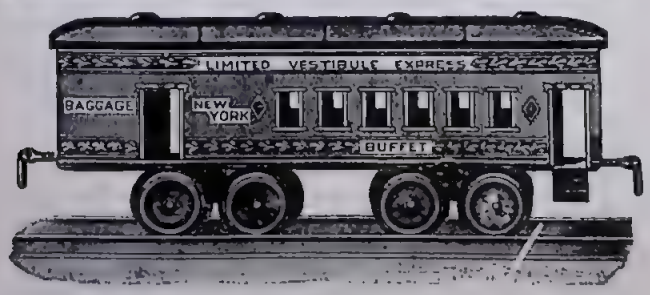


Later No. 25 has side rods and only two cab windows, plus ten-spoked drivers. Details were also more modern. Engine lines are classic.

engine boiler casting lacked rivet detail although it did have the customary bright metal boiler straps.

Mechanically, both locomotives were practically without flaws or mechanical bugs. Both engines had start and stop levers in addition to a reversing lever mounted in the engine cab. The lever handles were conveniently extended for easy access for short fingered children. Equipped with speed governors, as were all the Ives clockwork locomotives, the large eight wheeled engines rounded the tinplate track curves with miniature sways and swerves just as its prototype. Probably the most striking feature of these models dreamed up by Ives was the free swerving combination pilot-trucks. The cowcatcher and pilot trucks were made up as one unit and functioned as such. Just why this curious arrangement persisted in both the early and later models remains somewhat of a tinplate mystery. Perhaps this peculiar design simplified the (cast iron) boiler casting and eliminated the cowcatcher breakage which would be a constant problem with careless children. Because of the special Ives design, the pilot truck assembly was practically of one piece heavy sheet metal construction and the cowcatcher was the only iron casting actually used in the pilot truck assembly. The pilot disc wheels were made of formed heavy gauge sheet metal.





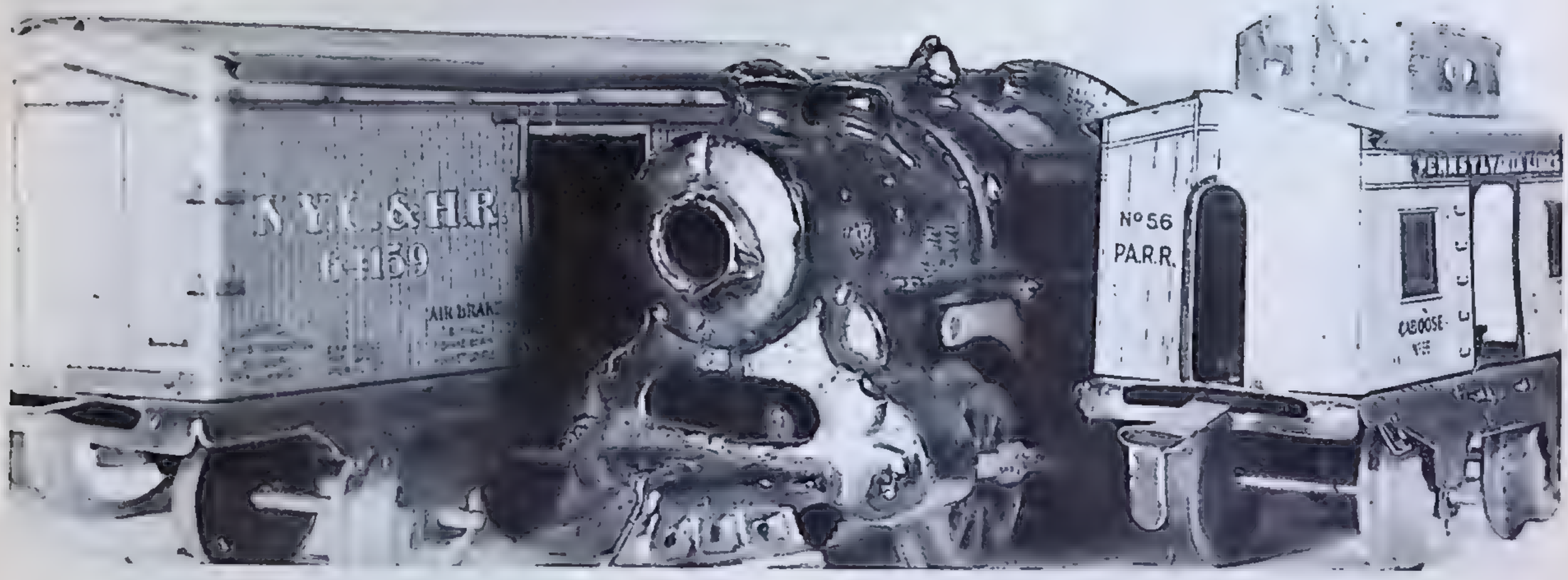
In spite of the fact that the early No. 25 locomotive lacked much in detail, it certainly made up for it in fine performance. Being the largest of the O gauge clockwork locomotives, measuring 9-1/4" in length, it represented some of the finer Ives workmanship. Because of their larger size and price, these No. 25 locomotives never shared the great popularity enjoyed by the other smaller and less expensive mechanical engines. Built of cast iron, brass and steel, these big engines stood much wear and abuse, even in the hands of active and unpredictable pre-school children.

In the later models, so many improvements and changes were undertaken that the two locomotives hardly resembled each other.

The boiler became one long sleek looking mass with rivet detail, valve and pipe detail, all cast as part of the boiler. The engine cab had two long low window frames. The whole engine gave an illusion of greater length with a low center of gravity. A supported metal handrail appeared on both sides of the engine boiler and one piece side drive rods gave the locomotive a mechanical motion that somewhat crudely resembled the prototype.

A great improvement appeared in the drive wheels. The cast iron machined drive wheels were of the 10 spoke type, giving a more realistic touch to the No. 25 engine. The old square type headlight and the tall smoke stack were replaced with more modern ones just as the prototypes had. In place of the old four wheel tender, a beautifully designed 8 wheel matching sleek black "Limited Vestibule Express" tender completed the improved No. 25 locomotive.

21- IVES' STREAMLINE DESIGN TRAINS



Ives freight cars and clockwork locomotives are still readily found at train meets and in local attics and basements at prices kind to the pocketbook. Variations are many in all car types.

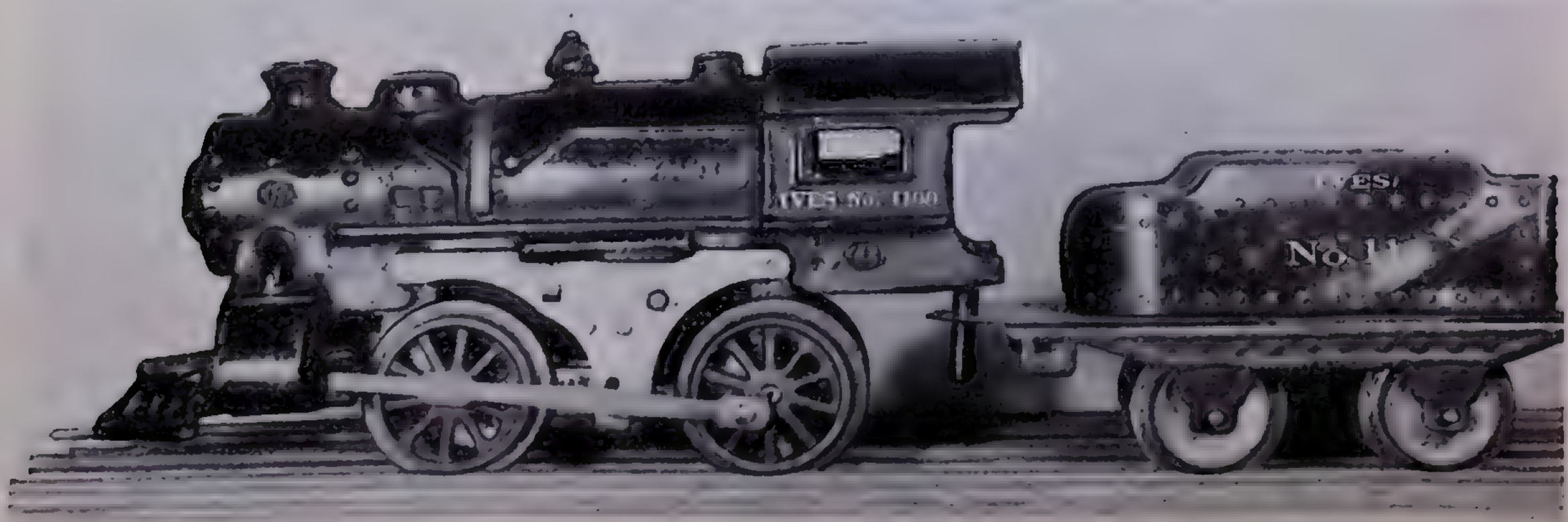
Low priced train sets of streamlined design were introduced by Ives in 1917 for the mass market.

A department store toy buyer, representing one of the large Western stores, stopped at the almost fabulous Ives Corporation show rooms, while on his annual business trip to the East. It was a time in 1918 just prior to the gay and busy Christmas buying season, and the traditional toy train season. As the tired buyers' feet shuffled along the soft carpeted floor of the show room, they finally came to a definite halt. The professional buyer had been looking over several of the toy train sets, and stopped at one that particularly seemed to have caught his eye.

Silently and slowly the buyer assembled the oval of O gauge electric track and carefully placed the No. 1100 Ives four-wheel engine upon it, then coupled its load of four different freight cars. A grin of satisfaction spread over his face as the miniature electric locomotive leaped into action at the moment that the current surged through the track. The little glossy black engine broke the silence of the neat and quiet Ives sales room as it scurried along the tin rails. The lightweight track sections helped to amplify the metal rattle of the tinplate lithographed cars into a constant miniature roar and clackity-clack sound.

For a moment the buyer seemed to be pleasantly hypnotized by the traveling headlight beam of the engine. The light rays of the electric headlight caught the silver sparkle of the shiny new rails as the engine dashed across the oval course. Along with the din of the rattling freight train the voice of the Ives salesman, who now appeared on the scene, could be heard saying, "This is the cheapest Ives O gauge electric train set made today that features an operating headlight."

The No. 1100 steam-type O-4-O electric engine was by no means an entirely new model in a strict sense of the word. It was a modified earlier model with the electric headlight built right into the front boiler plate making the engine the feature attraction of that year; at least to judge by the Ives catalog and magazine advertisements. In 1917 and 1918 the complete line of Ives locomotives underwent a program of "streamline design," as the Ives people like to call it. This revamping or redesigning was quite evident when previous engine models were compared. The new series Ives locomotives appeared more on the slim side and somewhat longer in body length. This illusion was easy on the eye but the ruler and tape measure told another story. Since the superstructure detail was carefully planned in the design of these streamline locos, the latest models had more profuse detail incorporated in the body proper.



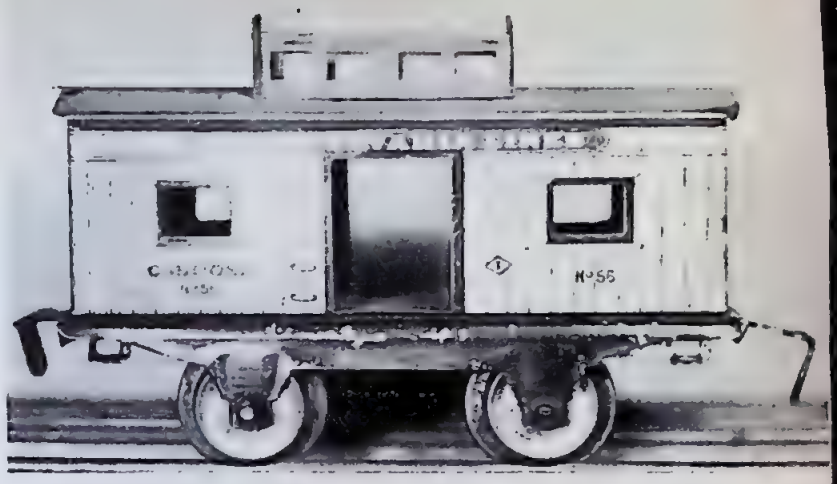
or example, where the older model made before 1917 had a cat walk skirting the boiler, the new model had, in addition to this cat walk, a compressed air tank mounted right underneath this walk. While both the old and new models had boiler piping and valve detail all neatly placed as part of the body casting, the piping and valve detail seemed more vivid in the newer locomotives. The newer engine had large steam chest pipes running from the side of the boiler to the steam chests themselves. This special pipe detail was lacking in the pre-streamline locomotives. The engine cab was changed from a two window frame type to a single frame style in keeping with the big prototype design.

While Ives always tried to strive for perfection in all its toy products, there were times when some of the little cast iron No. 1100 engines left the factory with that not-too-perfect look. Usually these engine inspection slip-ups occurred at the peak of the production season when the Ives factory employed extra workers. One of the more common imperfections found on the cast iron engines was the presence of casting fins. Very often in the iron casting process, a fin of metal would be left adhering to a part of the casting. Normally a metal fin of this kind would be ground off before the casting was sent on to the next department to be finished and painted. (An example of such a fin is visible in the accompanying photo of the engine). Fortunately the Ives electric motor department was a little more strict about their inspection of fittings and parts. It was indeed seldom that an Ives electric locomotive ever left the plant without a final running test. All electrical contacts and connections had to be perfect to be dependable.

Since the No. 1100 locomotive power depended upon the single third-rail pickup roller, Ives made every effort to provide a strong and serviceable roller made from the best materials. It was perhaps in these No. 1100 series engines that the firm used the largest amount of copper and brass when compared with other Ives O gauge engines, particularly the clockwork engines of this same period.

Just as in the construction of all the Ives cast iron engines, the bodies of the No. 1100 series (consisting of boiler, pilot, steam chests, superstructure, and engine cab) were all made from two half-castings fitted together with two large rivets. The somewhat tapering boiler was smooth except for the cast detail in the form of pipes, valves and rivets. A nickel-plated boiler band divided the boiler into almost two equal halves. The nickel plated boiler band or strap had a cherished place in the toy train industry and it continually appeared on engines until the mid-1920 period.

Like all early Ives engines the No. 1100 ran in one direction only and the motor was powered to only two of the four available drive wheels. The quiet operation of these little engines was rather remarkable. This near-silent operation was perhaps the result of using so few gears in the moving mechanism as compared with the later Ives motors equipped with a large number of gears. One of the chief attractions of the steam type No. 1100 was the electric headlight mounted in the front boiler plate of the engine. The screw socket receptacle was located inside the boiler and in operation only the glass bulb part of the electric headlight was visible. This bit of realism was to be enjoyed only by Ives owners until American Flyer appeared with a similar headlight in their locomotives in the 1920's.



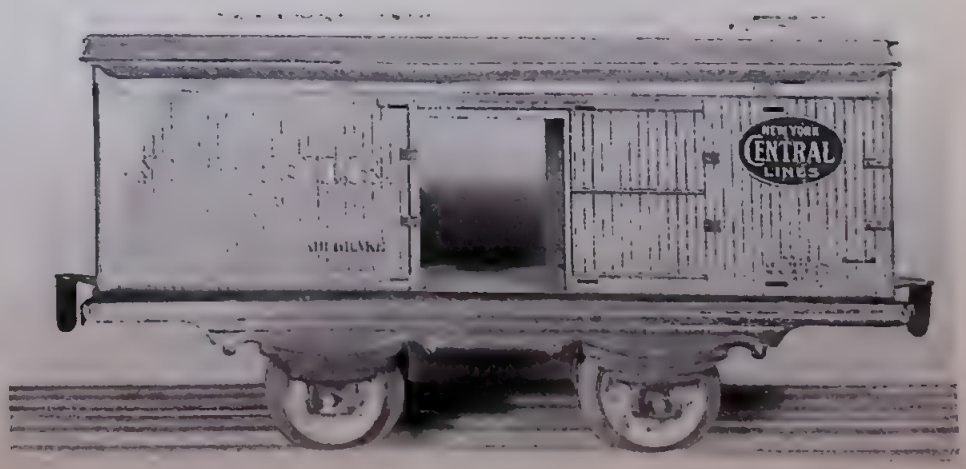
Ives cabooses are invariably fascinating, even in the simple No. 56. Other versions have more detail, or are larger in both 4-wheel and 8-wheel versions.

The large motor side plates making up the motor unit were brightly nickel plated and added a sparkle to the black engine, from the standpoint of appearance. These early engines were made with cast iron machined wheels and therefore had no steel nickel plated rims such as were found on the later models made by Ives. The iron wheels on the No. 1100 engines were pressed on their axles at the factory and were really tamper proof as compared with the early Ives locomotives wheels that were fastened to their axles with small nuts.

Small metal nameplates that were used to identify the IVES locomotives made before the "streamline" series appeared, were discarded and except for small rubber stamped opaque silver ink lettering "IVES No. 1100" found just underneath the windows on the engine cab, there was no Ives identification on these engines.

The small four-wheel matching tender furnished with this locomotive was lettered "IVES No. 11," not No. 1100 as might have been expected. Incidentally, this same tender was sold with Ives clockwork locomotives since Ives didn't think it was profitable to produce two different tenders —one for clockwork and one for electric locomotives. The tender was made of two pieces of light weight embossed sheet metal—one piece forming the floor, steps and trucks

LEFT: Ives 1100 loco and tender. Low priced engine lacked reverse feature found in higher priced clockwork locos such as the Bing loco on Page 22. Later period German and British models carried clockwork development forward to a very high degree of efficiency.



Ives 64159 single truck lithographed boxcar was stripped down, less doors, in obvious cost cutting move. Compare with similar double truck car on Page 46.

Ives No. 566 tank car was painted a drab grey enamel, rubber stamped for Standard Oil. Other freight cars were lithographed.

Ives lithographed double truck boxcar in Joe Ranker collection uses same basic body as 4-wheel car on previous page. Note however that litho stones have been changed in many minor ways. Cars by Ives, Bing, Fandor, others, were amazingly similar.

of the tender, while the other piece formed the body.

From a simple design viewpoint, there was little to be desired in this compact unit. Bring tin wheels helped to bring out detail in the trucks. This Ives tender was the only one of its kind made at that time that featured embossed rivet detail. Although there were many types of lithographed O gauge tenders made by toy train manufacturers, none seemed to have any embossed detail directly on the side panels, where the rivets were especially common in the prototype.

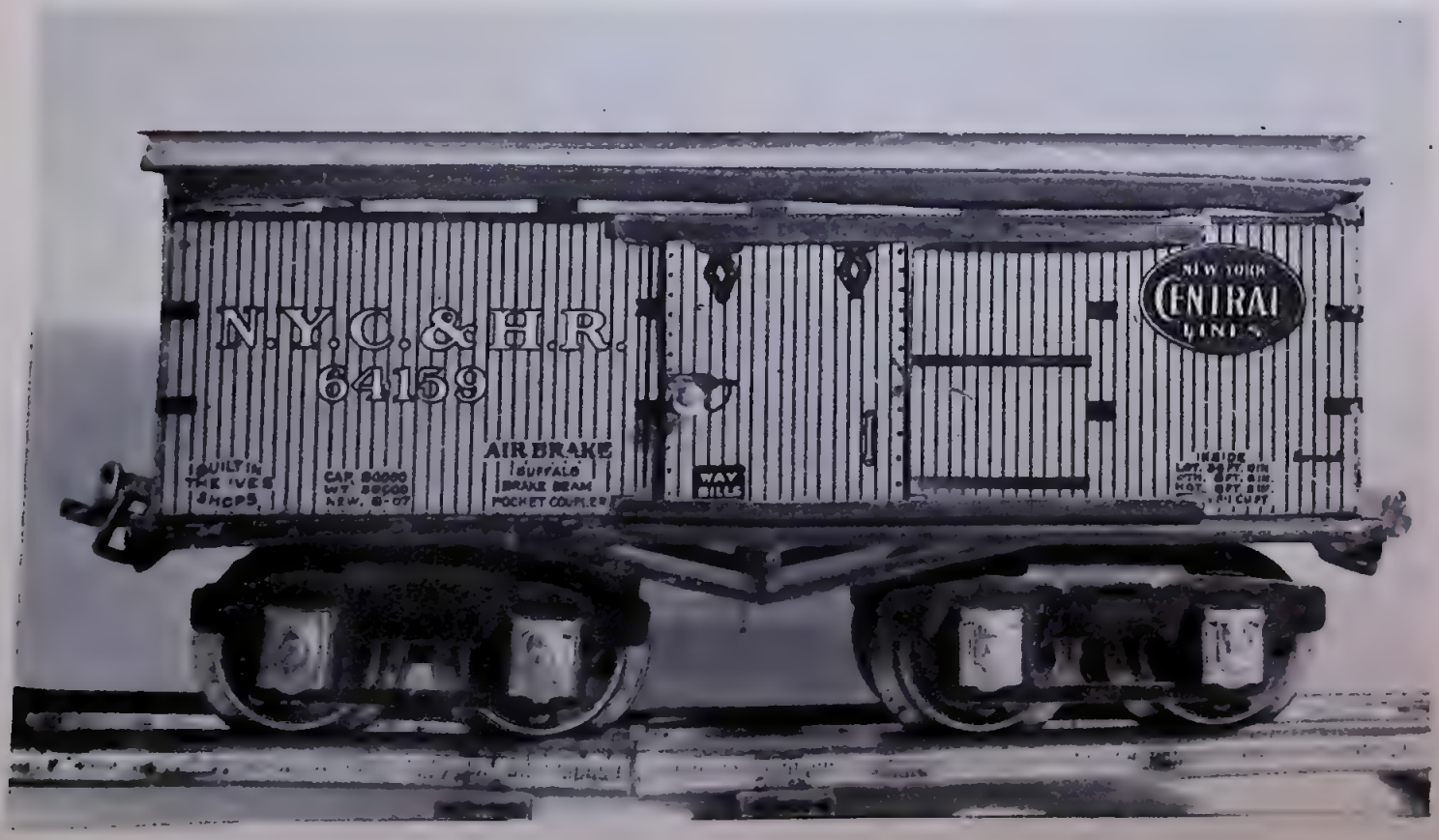
The freight cars furnished with the No. 1100 engine were the big deluxe 6-1/2" size which were just coming into popularity with toy train fans. Plain hook type couplers were used on all of the rolling stock. With the exception of the oil tank car, all cars were lithographed in fine miniature detail. The oil tank car was painted a grey color and was lettered "Standard Oil Company." The underframe and trucks of the tank car as well as all the other Ives rolling stock were finished in black.

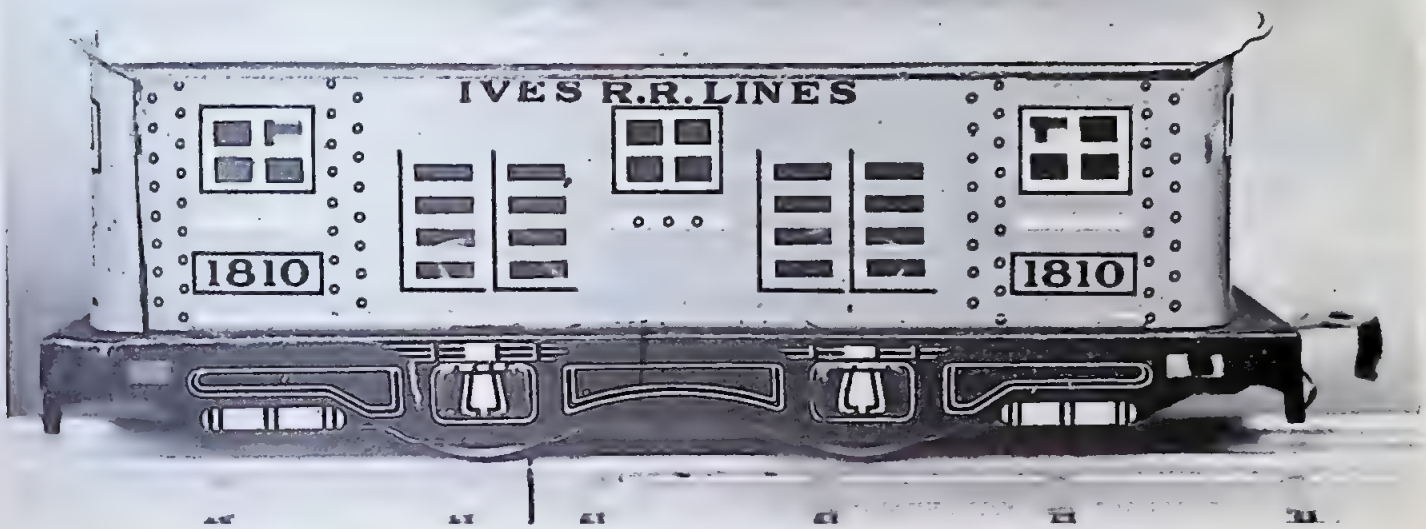
Of all the freight cars made by Ives, the tank car had the least amount of detail. There were no steps, brake wheels, or railings of any kind. The car consisted of a tank with a dome mounted on a flat body, the same as that used for all Ives cars of the long service. This oil tank car had the distinction of being the only Ives car that had embossed rivets that were plainly visible through the heavy enamel finish.

In addition to the Standard Oil lettering, the following wording also appeared on the tank sides, "Air Brake—Capacity 10,000 gallons—Made in the Ives shops." In keeping with the No. 500 series freight cars, this car was listed as the No. 566. While all of the Ives cars with lithographed finishes stood up fairly well under hard use in children's hands, the oil car finished in painted enamel was very apt to show paint chips after hard use.

The Ives box car No. 64159 was truly a lithographer's masterpiece. Car sides and ends had enough printed detail in full color to make it an almost exact copy of the prototype. Actually the Ives box car was patterned after a wood sheathed car made by the American Car and Foundry Company in 1907. The car carried the old style herald "New York Central Lines," and had more lettered detail than any other lithographed Ives freight car of the period.

The Ives lithographed side door type caboose No. 56 was a shorter unit but was equally attractive and well-propor-





Ives O gauge litho No. 1810 boxcab locomotive with die cast wheels in blue, yellow, and black. It was a short lived Lionel answer to Ives' need for a low priced loco. Note simplified styling.

tioned. The underframe of this car was rather plain and lacked the fancy embossing of the No. 500 series underframes. Steps were found on each end of the caboose and were really part of the underframe structure. Car sides were finished in neat patterns of imitation scribed wood sides with the grain of the wood showing and every board in its place.

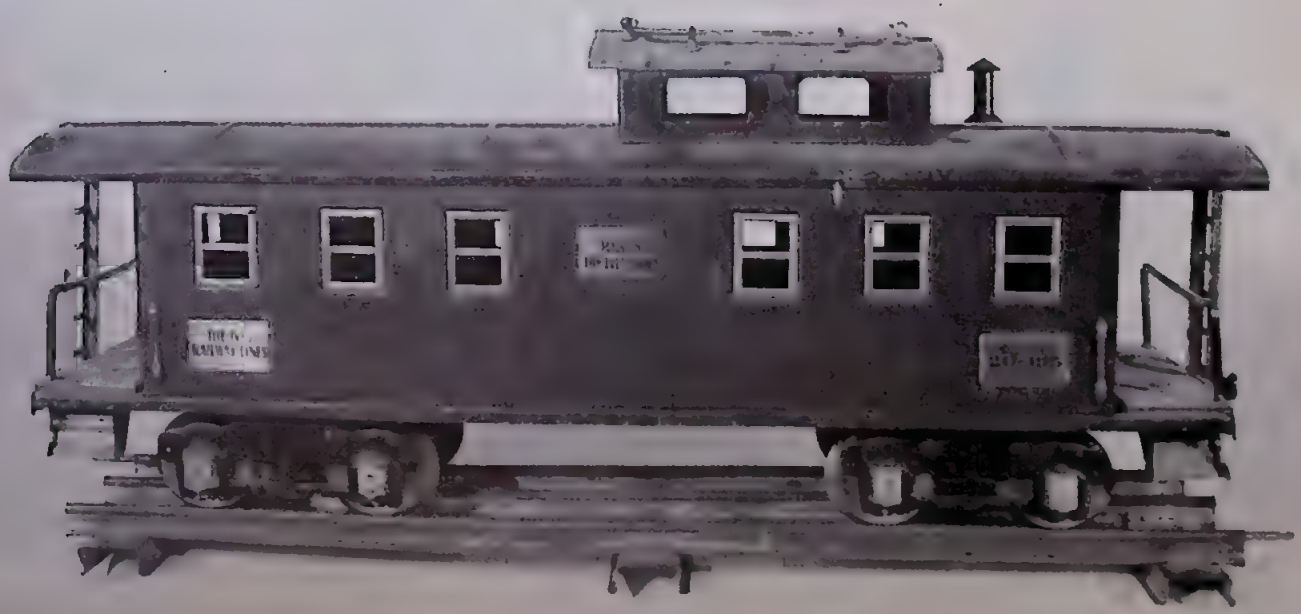
The caboose was finished in white and grey colors making it one of the lightest-colored cars made by Ives. The little coupola found on the caboose roof boasted some twelve open windows, more than found on any other similar toy caboose made by competitive manufacturers. While Ives offered some variation in the road names and heralds found on its box cars, the little five-inch-long caboose came lettered for the Pennsylvania Railroad—nothing else.

The caboose seemed to have one particular identification mark that apparently was lacking in other Ives cars. This special mark consisted of a capital letter "I" placed within a diamond-shaped border, and was always found on the lower right-hand corner of the open side door.

Like the slight imperfections occasionally found on the Ives locomotives, the Ives freight cars were also found to have left the factory on some occasions as second-rate in quality. Often the lithographed car ends were assembled hastily without careful alignment and as a result the end pieces would not match perfectly—a somewhat unsightly error that would catch the eye of the miniature railroader. Another rather common imperfection was that of careless stamping of the lithographed open window and door frames. These window sills and doorway frames would appear off center with unequal edges.

The Ives firm, as a matter of interest, was not the only manufacturer that was guilty of such errors. These odd production problems could be found among other toy train manufacturers' items.

Ives giant standard gauge No. 20-195 caboose in red enamel and brass plates uses bodies bought from American Flyer. Car is one of the "transition period" cars prior to 100% Lionelization.



22- DORFAN AND DIE CASTINGS

Smallest of the American Big Four train makers of the '20's, Dorfan's place was assured when it pioneered in the use of die castings.

Dorfan No. 3930 standard gauge 4-4-4 followed Pennsylvania RR styling, different from that used by Ives, Lionel, and other makers. 12-wheeled 3930 used early zinc alloy pressure die castings.

It was in 1924 that two brothers with identical ambitions started out on a career that was to lead them to the founding of the Dorfan line of toy trains. It was sadly at the cost of thousands of dollars and ten of the most anxious and industrious years of their lives.

With more hope and abundant determination than financial blessing, Julius and Milton Forcheimer began to stir up the peaceful and contented toy electric train world with their novel "take apart" or Loco Builder sets that moved slowly out of the modest Dorfan factory loft in Newark, N.J.

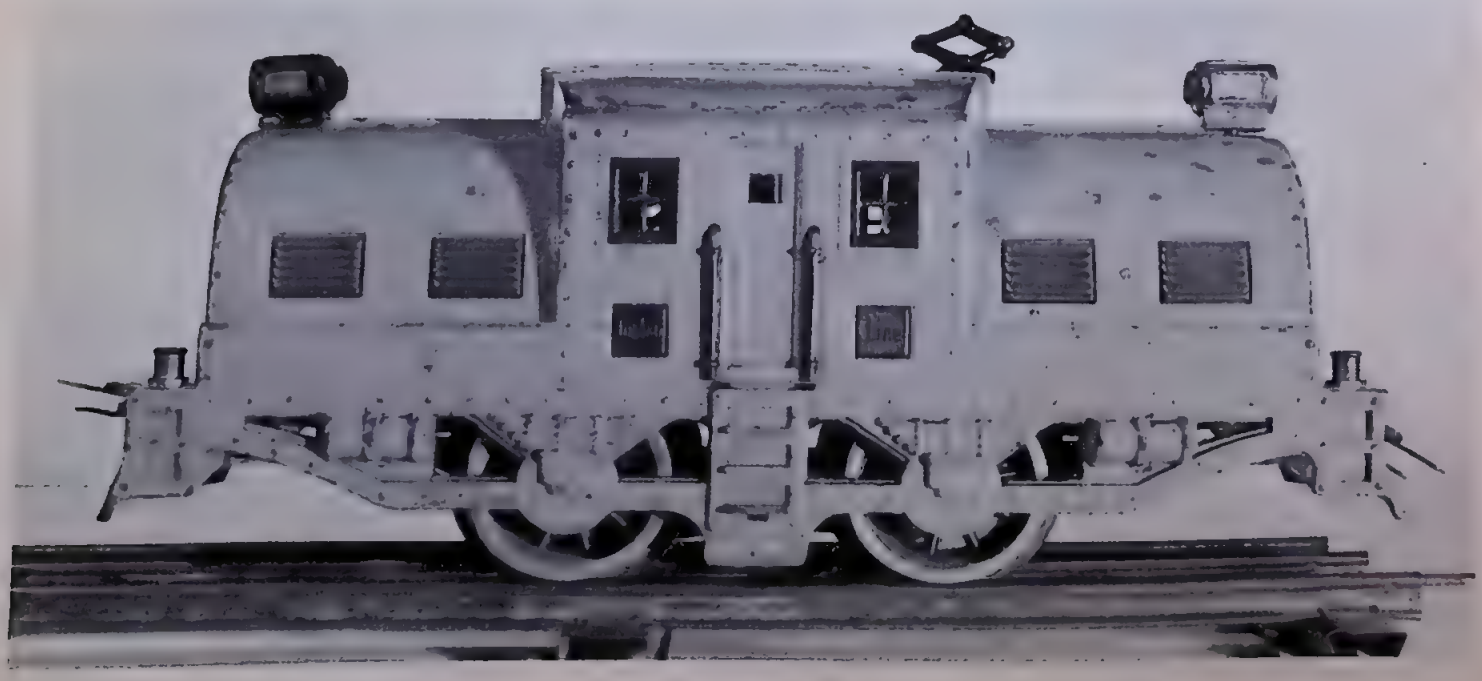
Although the take-apart toy feature was not original (many assembly toys such as automobiles, electric stationary motors, steel construction sets, etc. had been on the market for many years), the fact remained that the idea had never been applied to track operated toy trains before this venture of the Forcheimer brothers.

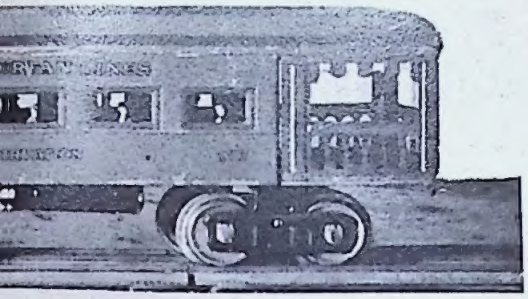
During the early years, the Dorfan line consisted of some O gauge clockwork toy train sets and the new "take apart" O gauge 0-4-0 electric type locomotives. Later several standard gauge electric type trains were added to the line as well as a fairly extensive list of train accessories.

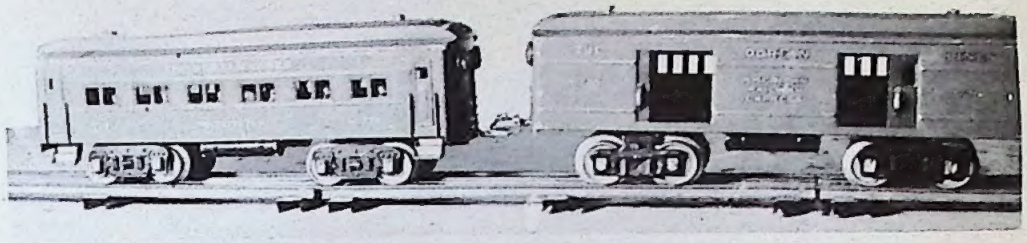
The novelty of the Loco Builder sets, as they were called by Dorfan, caused a bit of excitement among the toy train fraternity as well as among the buying public. From the very beginning, the Forcheimer brothers tied up their fortune and future in the unusual die cast construction of the electric type locomotive bodies. These Dorfan engines were as different from conventional toy locomotives as could possibly be imagined. There was no separate motor unit nor even an underframe of any sort. Dorfan had introduced an entirely new concept in toy electric locomotive construction and the great secret seemed to lie in the fact that the engine depended upon the two large accurate fitting die cast halves of the body which served as recepticals for the motor field mount and as bearings for the wheels, gears and armature. In fact, the entire locomotive body, wheels, gears and motor parts were actually held together with two locking devices or pins, which were the die cast removable engine headlights with steel rod extensions found on both ends of the body. Any school boy could *really* take apart the locomotive in less than a minute's time, as there were no solder joints nor loose wires to stump amateur mechanics.

One of the greatest problems and perhaps the weakest link in the long chain of Dorfan products was the brittle, weak die-cast metal which was then being used. In the early days, the die cast metal was composed chiefly of zinc and copper. Ironically, the metal was called unbreakable Dorfan Alloy. The Forcheimer brothers were unusually sensitive and concerned about the diecastings which incidentally were made by an outside firm as were a lot of other component parts of the Dorfan engine. Very often owners of Dor-

Dorfan 4-wheel standard gauge die cast loco resembles steel Nos. 10 and 380 by Lionel. Headlight upper right is reproduction.







Dorfan standard gauge Baggage No. 770 and Pullman No. 772.

fan electric locomotives found that age and adverse weather conditions affected the weak die cast engine sides causing cracking or warping to such an extent that the wheels and motor became useless. In due time, not only Julius and Milton Forcheimer, but the entire Dorfan factory personnel began to inherit such customers headaches. Time and again factory check-ups revealed nothing. Every new locomotive that left the Dorfan plant in Newark was inspected and nothing was left to chance. The motor and all individual parts were the finest made and certainly of very high quality. Engines boasted such refinements as high gear ratios, "unbreakable Dorfan alloy" die cast sides and ball bearing wheels. These Dorfan engines were so heavily loaded with traction power that they actually could climb a 24% track incline with a load of cars! In fact, Dorfan was the only manufacturer producing a toy locomotive with such startling power; and during the pre-Christmas season, the chief Dorfan display in department stores consisted of a specially constructed inclined spiral track layout that almost always attracted a crowd.

The toy train happy brothers directed their sales promotion almost exclusively to the family of Dorfan dealers. There was no evidence of any large scale advertising directly to the public and perhaps it was for that very reason that Dorfan trains never approached the nation-wide popularity enjoyed by other American toy trains.

Like other manufacturers of toy railroads, Dorfan issued annual catalogs illustrating the complete line of products and improvements. Some of the later catalogs were exceptionally elaborate and colorful and could favorably compete with those issued by the big companies such as Lionel, Ives and American Flyer.

Although Dorfan never made a twin motor engine, one of its biggest and fanciest models was the heavy twelve wheel ball bearing locomotive No. 3930, a "take apart" standard gauge engine. Just like the smallest O gauge electric locomotive, it was easily assembled or taken apart, since the parts were identical and differed only in size; the wide gauge engine, being more elaborate, contained more parts.

The Dorfan No. 3930, being a 4-4-4 type engine, had some faint resemblance to the then popular Ives No. 3243 locomotive, but only in bare outline and wheel arrangement, otherwise the comparison ended there. Being original, was a strong Dorfan virtue.

Both ends of the cab of the Dorfan engine were slightly "V" shaped. The cast zinc-copper alloy body sides had their share of generous heavy bold rivet detail along with air tanks, windows and doors, cowcatchers pilot and steps all in one casting.

Both the front and rear engine headlights and pantographs were removable and served as lock up pins in holding the engine together in one piece.

Curiously, Dorfan made two distinct railings on this particular deluxe model; one was a fine, correctly proportioned railing on both ends of the body proper, the other was a heavy oversized stamped flat steel railing, used on the walk between the cab and pilot.

These Dorfan super giant engines were usually finished in black, green or red colors along with a very limited amount of nickleplate trim. The plated trim was usually found on the plain, flat pilot truck frames, handrailing and couplers which were of a patented semi-automatic type.

While other manufactures were using either rubber stamped opaque ink lettering or brass nameplate, Dorfan

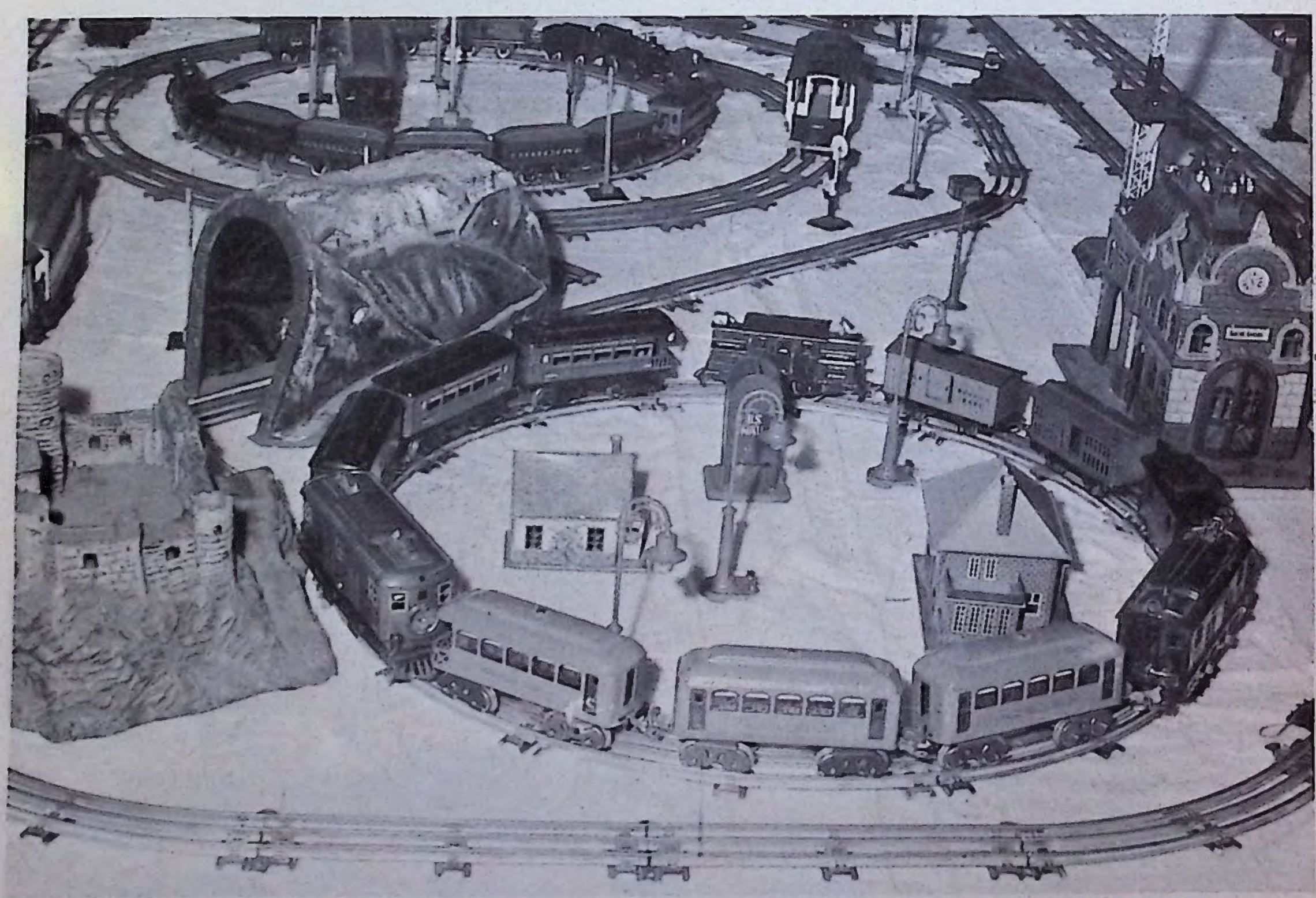
Bright orange Pullman No. 789 with litho sides has had Lionel couplers substituted. Operators of either a bygone era or the present frequently change couplers for interchange purposes. Always keep the old couplers for future reconversion.

was among the first of American toy train firms to use decalcomania lettering on their locomotives and cars.

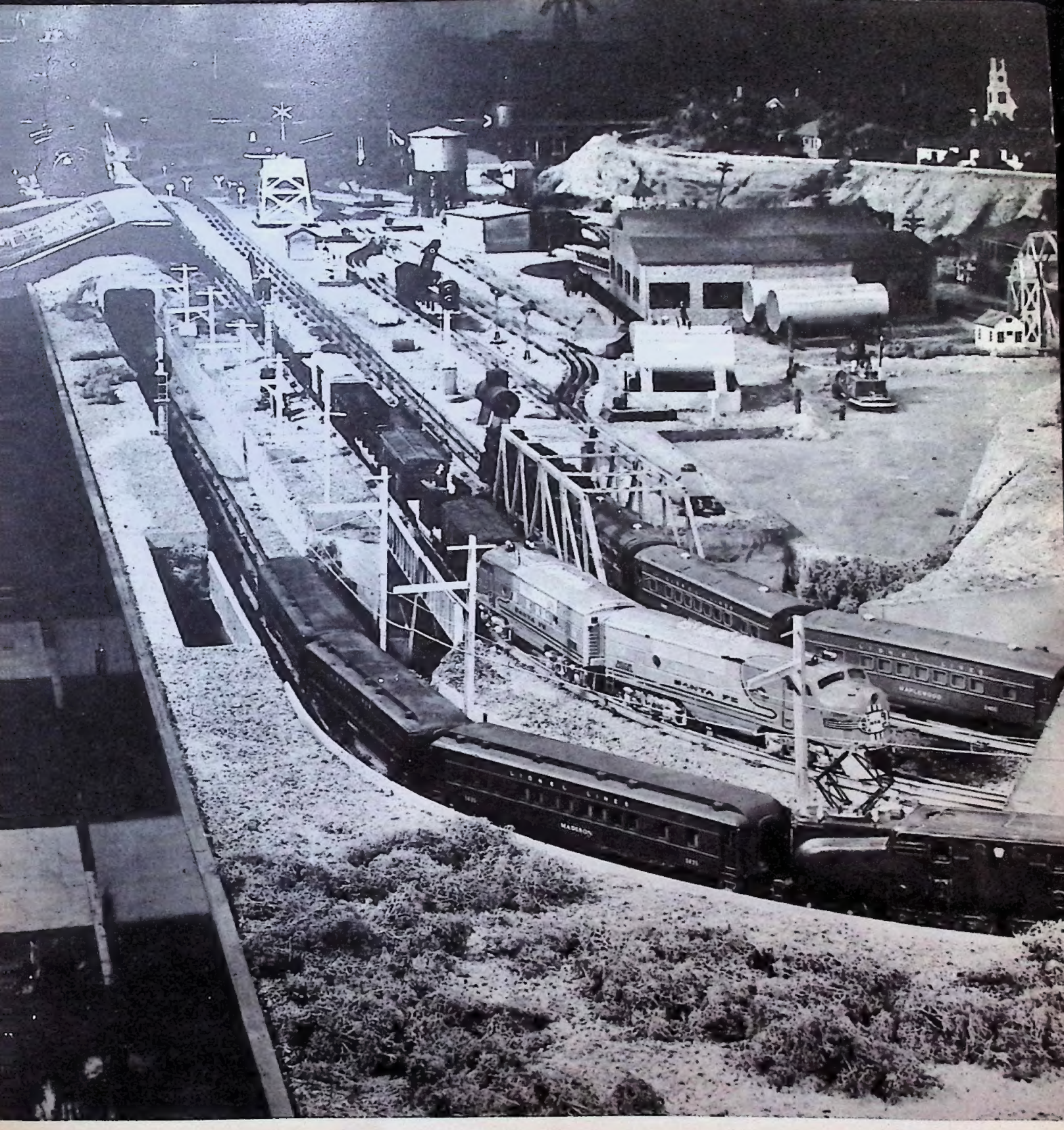
The standard gauge cars used with this deluxe Dorfan locomotive were perhaps as different from conventional toy passenger cars as the Dorfan locomotive was from the usual tinplate locomotive. High quality reflected from every angle of the Dorfan car. The heavy gauge sheet metal construction with built in body reinforcements gave the cars a strength that easily withstood the abuse of careless handling, but this very massive construction gave the cars more weight than was really necessary and thus added deadweight which cut down on the hauling power of the locomotive.

These 700 series illuminated cars were equipped with either the fine super detailed Dorfan heavy cast trucks or the simpler stamped metal embossed trucks which closely resembled those made by Lionel during the last 1920's and early '30's. At one time Dorfan equipped these cars with die cast trucks which were perhaps the finest detailed trucks ever made for toy passenger cars, but these trucks were discontinued when it was found that they added more unnecessary weight to the cars. An example of these heavy die cast trucks can be seen in the accompanying photo of the No. 72 pullman car.

The wheels of the car were somewhat large and gave the car a rather stubby heavy appearance. Except for the oversized baggage car door handles and over generous dimensions of the observation car platform, the Dorfan No. 700 series cars seemed well scaled and harmonized with the No. 3930 electric locomotive. Each enclosed vestibule car end section had two round port-hole type windows, one on each side of the car. This particular window design and location seemed to be a distinct Dorfan feature. Another Dorfan special design was the row of miniature passenger car figures fixed in the windows on both sides of the car. With a somewhat stiff mechanical stare, each figure appeared sitting in the usual forward direction of the train.



Another view of the Williamsburg Christmas display. Extra equipment was placed on sidings and extra loops for color and appearance, rather than on more static looking shelving.



The Lionel Corporation's New York showrooms were famous for their tremendous, constantly changing operating display layout. While primarily a showcase for Lionel's current products, the layout was further enhanced with lakes, mountains, and a wide variety of handmade structures, boats, and scenic accessories.

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